# ne Iron

READING MATTER PAGE 34.

A Review of the Hardware, Iron and Metal Trades.

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cost of measuring instruments and their liability to get out of

IVES

order.

As an example of the difficulty of using the wheel and pinion for the magnification of an angular motion produced by a small force, Profs. W. E. Ayrton and John Perry, in a paper recently read before the British Royal Society, mentioned the fact that although they used this plan for a year or more in their electric measuring instrutheir electric measuring instru-ments, and although the wheels and pinions were made by a good watchmaker, still the fricgood watchmaker, still the fric-tion involved in such a plan induced them to abandon it in favor of a new arrangement described below. The telescopic described below. The telescopic method employed by Weber, and the spot-of-light method due to Sir W. Thomson, for magnifying the effect of an angular motion are, of course, unequaled for stationary measuring instruments but for instruments but for instruments. uring instruments, but for in-struments which must be carried about and used quickly, without the necessity of adjust-ment, these most ingenious re-flecting methods are quite un-

With an ordinary cylindric spring having a small angle between the osculating plane and a plane perpendicular to the axis, as is the case with all

between the osculating and a plane perpendicular to the axis, as is the case with all spiral springs such as are in practical use, it is well known that but very little rotation is produced between its ends by the application of an axial force. Consequently, with such springs it is only possible to obtain magnification by the employment of a system of levers, or of a rack and pinion. It occurred to the authors, therefore, to consider whether it would not be possible to make a spiral spring of such a nature that for a comparatively small axial motion of its ends there should be considerable rotation of one end relatively to the other, and by the employment of which all levers, and by the employment of which are the consideration is positive or negative. motion of its ends there should be considerable rotation of one end relatively to the other, and by the employment of which all levers, racks and pinions could be dispensed with, so that no error could be introduced by wear and tear or by want of fitting of joints, and, further, so that the temperature correction should be merely one affecting the rigidity of the material used as a spring, and not a correction such as had to be applied in consequence of the contractions and plied in consequence of the contractions and expansions of the various parts of an ordi-

plied in consequence of the contractions and expansions of the various parts of an ordinary magnifying apparatus.

The theory of the strength and stiffness of the ordinary cylindric spiral spring of small angle was given for the first time in 1848 by Prof. James Thomson, and Professors Ayrton and Perry followed this method in investigating the laws governing the behavior of spiral springs generally. They found that if the centers of all cross-sections of the wire or strip forming the spring lie on a right circular cylinder of radius r; if the spiral have everywhere an inclination, a, to the plane perpendicular to the axis of the cylinder, and if a force, F, act at one end of the spring along the axis, the other end of the spring along the axis, the other end of the spring being fixed; if B is the flexural a right circular cylinder of radius r; if the spiral have everywhere an inclination, a, to the plane perpendicular to the axis of the cylinder, and if a force, F, act at one end of the spring along the axis, the other end of the spring leng fixed; if B is the flexural rigidity of the wire in the osculating plane, and if A is the torsional rigidity about the spiral line at any place; if the angular motion, in a horizontal plane, of the free end of the spring relatively to the fixed end to be called  $\varphi$ , and if the axial increase of length be called d, and the whole length of the spring along the spiral l, then

Assuming for the general investigation that the cross-section of the wire is elliptic, it is found that the rotation of the free end causes a negative rota-

site way, and now a rotation tending to coil it up is found to be produced by the application of an axial pull.

The twisting torque to which the spring is subjected is F r cos a, and the bending torque to F r sin a. But the twist must be multiplied by sin a, and the bend by cos a when we project these motions on a horizontal plane. So far, then, as the total rotation in a horizontal plane of the free end of the spring relatively to the fixed end is con-

A New Form of Spring for Electric and Other Measuring Instruments.

In steam and gas engine indicators the pressure of the fluid on a piston produces a slight shortening of a sprinal spring, which is magnified by a lever, and so the pressure of the steam or gas is recorded. In what are usually known as spring balances there is also occasionally a magnification of the elemgation of a spiral spring affected by the use of a rack and pinion. Such magnifying arrangements, however, not only introduce inaccuracy by the bad fittings of hinges or feeth, an inaccuracy by the bad fittings of hinges or interior of the strip when him the number of coils—that is, a rotation in the opposite in clearly and as thin as possible, should be would cause an negative rotation, or one tending to uncoil the spring.

To determine the dimensions of the spring which beyes a should give the largest amount of rotation with the minimum amount of stress, the general conclusions arrived at are that the greatest stress in the material. Having made their calculation of stress in of the greatest stress in the material. Having made their calculation of stress in the greatest stress in the material. Having made their calculation of stress, the general conclusions arrived at are that or order, with a given a constant of the greatest stress in the material. Having made their calculation of stress in the greatest stress in the material. Having made their calculation of the spring, to obtain a large amount of turning of the free end of the spring. To the modulus of rigidity, and E Young's modulus for the spring, combined with small maximum total stress in the material. The authors show how their spring affected by the use of the spring, combined with small maximum total stress in the material. The authors show how their spring and the strip of elliptic section should be as long Young's modulus, and they conclude their material to its to the greatest stress in the material. The authors show how their spring and the strip of the spring, combined with sm

Fig. 2.—Shielded Measuring Instrument.

ordinary galvanometers. One form of the instru-

quires strains which are just opposite in character to the initial strains which we wish it to possess, for, as already explained, if the spring be constructed as in Fig. 5, p 5, an extension to the spring produces a rotation tending to uncoil it. Hence a spring must not be regarded as ready for use until it receives a good set by means of a weight hung from its end. This instrument is direct-reading, the adjustment for sensi-bility being made by a small sliding coil, the correct position of which is initially determined experimentally by the makers, and in which position the coil is permanently fixed.

permanently fixed.

Theory of the Solenoid Spring
Ammeter or Voltmeter.—If C is
the current in ampères flowing
through the coil, the attractive force on the iron core is  $K C^2$ 

1 + SC

where S is a consonant, which is the greater as the current is smaller, for which the iron tube A A, Fig. 1, becomes saturated with magnetism. The position of this iron in the solenoid is so selected that K remains practically constant throughout the

Thus, by the employment of springs such as those described, they have succeeded in making ameters and volmeters, or instruments for measur- Hence instruments for measuring respectively electric currents and differences

 $p \varphi = \frac{K C^3}{1 + S C}$ 

of potential, in which the and since S C is great in comparison with unity for such currents as we wish to measpointer moves over in some cases as much as 270° of the scale, instead of only 50°, which is all that can be obtained with

 $\frac{p \cdot \varphi}{K} = \frac{C}{S} - \frac{1}{S}$   $C = \frac{S \cdot p}{K} \varphi + \frac{1}{S}$ 

ment is shown in Fig. 1, where A A is a thin, hol-low tube of charcoal iron that is, equal divisions of the scale correspond with equal additions to the strength of the current except close to the zero, and the authors do not usually graduade these instruattached at its lower end to a brass piece, G, guided at the bottom in the way shown. To G is attached

ments within 5 of the zero.
Shielded Measuring Instruments.—When shown. To G is attached the lower end of a spring made in the way described, of silver or hard phosphor-bronze, the upper end of which is attached rigidly by a thin rod to the glass top of the instrument, which itself is fastened rigidly to the framework of the instrument. The rod attached to the glass, and to which the upper end of the spring is attached, also serves as a guide to the rves as a guide to the nection with the terminal, so that when a top of the iron tube. In the space F F a solenoid wire or strip is wound, and E, which are the poles of the electroits ends being attached to the terminals shown. Hence, when a current case made of extremely thin, hard steel, is is passed through the wire, the iron tube is sucked into the solenoid, the other end being attached to the piece F, which is fixed relatively to the bobbin. The spindle G G, which is fixed to the manying interests A A more facilities and the control of the cont sucked into the soletoid, and its lower end G, to which the spring is attached, receives a large rotary motion, which is communicated directly to the pointer attached to the the pointer attached to the total constraints of the total constraints. The spindle G G, which is five core A and the constraints of the total constraints of the spring that the constraints of the spindle G G, which is sixed to the and its lower end G, to which is sixed to the spindle G G, which is sixed to the spindle G G, which is sixed to the spindle G G, which is sixed to the and its lower end G, to which is sixed to the and its lower end G, to which is capable are one of rotation and one parallel to the axis of the bobbin. As the iron core A projects into the strong magnetic field between D and E, it is strongly attracted toward E, when the the top of the iron tube. Parallax in taking read-current flows, and, as before, causes a large ings of the pointer is rotation of the pointer P over the scale. As avoided by the horizon-tal scale being on look-ment an adjustable iron piece, K, is provided, ing-glass in the well-known way.

which can be screwed nearer to or further from the core A, and by the use of which the that the cross-section of the wire is elliptic, it is found that the rotation of the free and of a spring, like Fig. 5 or Fig. 6, is greater the greater the inequality in the principal diameters of the elliptic section.

In Fig. 5 it is found that there is an uncolling on the application of an axial pull.

Fig. 5 shows a spring made of the same applied will now cause a positive rotation. It is almost certain that for any strip of material, but the wire has been passed through rolls, so as to flatten it in the oppositive value of  $\varphi$  obtained with the latter form of spring is found to be produced by the application with the latter form of spring.

In Fig. 5 and 4.—Weighing Machinery with New Form of Spring.

Spring.

By making the irron tube A A very thin, so as to make the instrument "direct-read be adjusted to the strip that it is magnetically staturated for a comparatively weak current, by call can be and the spring in the pring in the instrument "direct-read by the seal that it is magnetically staturated for a comparatively weak current, by call can be adjusted to the strip in the principal in the option of the free and the strip the instrument "direct-read by the seath that it is magnetically staturated for a comparatively weak current, by call can be adjusted to the strip in the principal in the option of the free and the strip in the principal in the time to say, each division of the strip in the iron to be as to make the instrument "direct-read by the seath that it is magnetically staturated for a comparatively weak current, by call can be a fixed distance which has been carefully described in the spring in the iron of spring.

By making the iron to be A A very thin, so as to make the instrument "direct-read to say, each division of the that the edge of the strip in the option of a comparatively weak current, by call can be a set to say, each division of the say, each division of the say, and the unit of the spring in collection of the spring in the iron so that the edge of the strip in the option of a s By making the iron tube A A very thin, so that it is magnetically saturated for a comparatively weak current, by

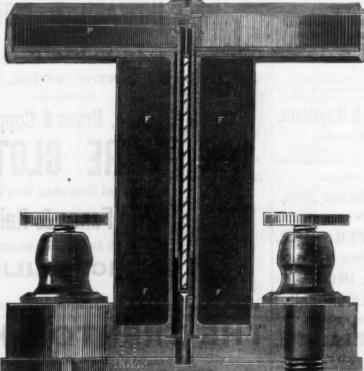
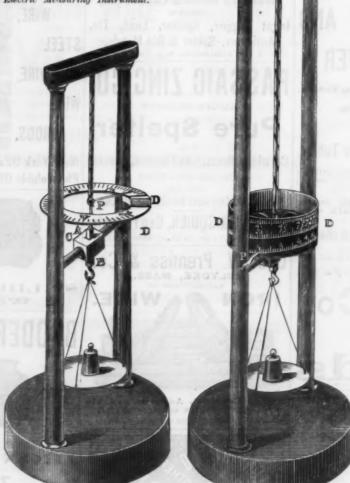


Fig. 1.—Application of Spring in Electric Measuring Instrument.

It is well known, for example, that, when a wire of circular section is subjected to equal twist-

and bent so that the flat side of the strip touches



worked out in this paper, so as to obtain a large rotation with minimum stress, and with not too much axial motion of the free with the ease with which more or less wire with not too much axial motion of the free end of the spring, they have succeeded in obtaining deflections up to 270° directly proportional to the current, and without any permanent set being given to the spring. To prevent a spring taking a permanent set for a large deflection, it is of great importance that the spring, after being delivered by the

maker, should receive a large degree of per-

(Continued on page 5.)

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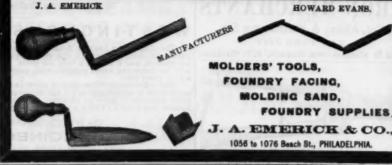
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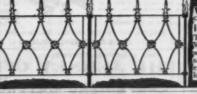
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(Continued from page 1.)

breakage of the pointer or the destruction of an instrument from a far too powerful current being sent through it by an observer (often a man with little experience in the employment of instruments) having con-

founded the constant of some other instrument with that of the one he was using.

In the first of these magnifying spring ammeters and voltmeters made by the authors

the instrument did not show the direction of

the current, but they have since added on

the base of the instrument a small compass needle (not seen in the accompanying illustrations) which points out at which of the

terminals the positive current enters, while the main pointer of the instrument shows as

before the magnitude of the thing to be

Weighing Machines. —Another class of in-truments in which they have practically

employed this spring are weighing machines, and Fig. 3 shows one of the arrangements adopted. The scale-pan is prevented from turning by the part A B being square and fitting very loosely a square hole in C. This

arrangement introduces practically no fric-tion, and prevents the moment of inertia of the scale-pan and load interfering,

by means of a rotatory motion, with the rapidity with which the pointer comes to

rest when a load is put into the pan. The position of the pointer P, which revolves when a weight is placed in the scale pan, is read off upon the spiral scale D, which in the

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A New Form of Spring for Measuring Instruments.-Figs. 5 and 6.-Springs Flattened in Opposite Directions.

rangement allows of the employment of rangement allows of the employment of springs whose ends have a relative motion of five or six revolutions. The authors also brought before the Royal Society a model showing a combination of bifilar and spiral spring suspension, is which great rotation and small axial lengthening or shortening are produced by an axial force.

Cnrious Railway.—Some interesting particulars regarding a curious railway at Falcon Cliff Castle, on the Isle of Man, have recently been supplied by a British railroad journal. The railway, as described, consists of an up and a down line of 4 foot gauge, running parallel for about 50 yards on a gradient of about one in three. The vehicles, two tramway cars, are moved by water poured into an iron tank upon which each car rests, and the running is controlled by a stationary hand-brake. The tank is of angular shape and rests upon four wheels of the usual railway-coach pattern, with a single flange on the tire. The Curious Rallway .- Some interesting tern, with a single flange on the tire. The shape of the tank necessitates two of the wheels being placed lower than the other two, while the body of the car, resting on the horizontal line of the angle, admits of it preserving a perfect level, although running so enormously steep an incline. A cable, per-manently fixed at each end to the cars, runs in the center of the 4-foot gauge and round a wheel about 6 feet in diameter stationed at wheel about o feet in diameter stationed at the top of the gradient. The brake referred to is upon this large wheel. The length of the cable is such that, when one car on one pair of rails is at the top of the gradient, the other upon the parallel pair of rails is at the bottom. The tanks upon which the cars are fixed are fed with water at the top of the incline and emptied at the bottom, the weight of water in the filled tank being sufficient to sink this car to the bottom of the gradient, and at the same time, by means of the attached cable, to draw upon the car and pas-mechanism for filling the tanks can be worked by the same man who has charge of the brake of the wheels upon which the cable revolves, and by means of which the speed of the running of the cars is controlled.

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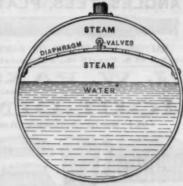
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Heat-Conducting Power of Materials.

The following account of a series of experiments made upon various materials for the purpose of determining their heat-conducting power was given in a paper read by Mr. J. J. Coleman, before the Philadelphia

Mr. J. J. Coleman, before the l'iniadelphia Society of Glasgow: In the last edition of the "Encyclopedia Britannica," Sir William Thomson calls at-tention (in the article "Heat") to unsatis-factory and inaccurate figures which have been put forward by Peclet as to the con-ducting power for heat of various solids. In ducting power for heat of various solids. In regard to metals proper, more correct results have been achieved by the late Principal Forbes, of Edinburgh, Professor Tait and others. In all treatises upon heat Peclet's figures relating to the conducting powers of fibrous and spongy substances, such as cotton, wool, sawdust, &c., are assumed as correct, and possibly they may be, but they are deficient in giving practical information to those who require to construct insulated cold chambers for the preservation of ice and similar technical purposes. of ice and similar technical purposes.

I have therefore had occasion to make a

number of experiments on the subject, which, beside their practical utility, I venture to think are of scientific interest. The apparatus used in my first series of experiments, which were commenced in June, 1883, consisted of 10-inch cubes of thin tin plate filled with ice, placed inside 18-inch cubes of thin tin plate, the space between the two cubes being filled with the substance to be tested. A number of these when were trating into the ice was easily calculated. It will be seen that this apparatus in its general features resembles the Lavoisier calorimeter, designed for measuring specific heat, but I am not aware that this principle has been adopted before for measuring thermal conductivity. The results of the experiments are summarized in Table I:

cube. This was surrounded by an outer layer of charcoal 3 inches thick, and an outer wall of wood (deal) 1 inch thick. It was found that under these circumstances the ice melted at the rate of about I pound per 24 hours for every superficial foot of insulation. Although silicate cotton stands at the head of the list as an insulator, to inches thick being equivalent to, say, 12 inches or 15 inches of wood charcoal, it by no means follows that it is always the best substance to use. To begin with, it is four times or perhaus six times or restly as in the same and the same times, or perhaps six times, as costly as charcoal, and has the fault of being friable and liable to fall into powder, especially if used on board ship, from the incessant motion of the vessel when out at sea.

#### Sun Kinks.

One of the daily papers of New York re-cently contained an article descriptive of a railroad accident, under the heading, "De-railed by a Sun Kink." The title doubtless puzzled many readers. The term indicates that the rails were thrown out of line by expansion, due to the heat of the sun. Few accidents are attributed to this cause, though it may be responsible for more than are sup-posed. The following, from the September number of the *Popular Science Monthly*, may prove interesting in connection with this

The expansion of metals under the influence of heat is very slight. A mile of iron rails, for an elevation of temperature of 100° placed side by side in a room kept at a uniform temperature of about 60° F., the ice melted per hour being drawn off and measured, from which the quantity of heat penetrating into the ice was easily calculated. It will be seen that this apparatus in its general features resembles the Lavoisier calorimeter, designed for measuring specific heat, but I am not aware that this principle

> TABLE I .- EXPERIMENTS COMMENCED JUNE 14, 1883-4.45 P. M. Ice Melted with Different Insulators Measured in Cubic Centimeters.

	Sil. cotton.	Hair felt.	Charcoal.	Wood shaving.	Breeze.	Wood and air space.	Temp. Fahr outside bxs.
Date.	Cub. cent.	Cub. cent.	Cub. cent.	Cub. cent.	Cub. cent.	Cub. cent.	Fahrenheit.
June 15, 10 a. m	898	807	800	745	1625	1500	Deg. 63
June 15, 6 p. m June 16, 10 a. m	250 815	305 940	380 943	350 985	708 1810	780 2020	65 71
June 18, 10 a. m	1065 1540	1945 1640	1278 1870	1395 1750	2513 8050	8000 8875	************
	2605	2885	8148	3065	5563	6875	**********

June 10, 10 a. m	1040	1010	1010	1100	00.00		
	2605	2885	8148	3065	5563	6875	*********
					d from abov		
Silicate cotton		*** '***	117 G	as-works br	gs eeze		

No observations were taken until the vessels charged with ice had been about 18 triangle may be calculated by the familiar rule of the reverse of the hypothenuse. It room, thus allowing equilibrium to be established. The melted ice was then carefully destroyed from the calculation are indicated by the simplest of lished. The melted ice was then carefully drawn off from the solid ice by an indiarubber pipe, provided with a clip, at 10 a. m. of June 15, and the results during the subsequent 24 hours were taken as the most reliable, although for a still further period of 48 hours the observations were continued, and are recorded in the table. All the materials were dried by keeping them in a loose state in a well-ventilated room, kept warm by an ordinary domestic fire for sev-

rule of the reverse of the hypothenuse. It will be found equal to nearly go feet. The result, though deduced by the simplest of calculations, is an astonishing one. It is enough to account for any number of "sun kinks." The books are very prolific of instances of expansion by heat, and always speak of the expansion of rails. They do not, however, allude to the geometrical element of danger; they concern themselves only with the physical one. only with the physical one.
It is obvious that a mile of rails would

loose state in a well-ventilated room, kept warm by an ordinary domestic fire for several weeks before the commencement of the experiments. It was now thought desirable to make a similar series of experiments in a room kept at a temperature of about 100° F. These were commenced on January 17, 1884, and continued until the 19th, and the results are recorded in Table II herewith. The

TABLE II.—EXPERIMENTS COMMENCED JANUARY 17, 1884-10.15 P. M. Ice Melted with Different Insulators Measured in Cubic Centimeters.

	Sil. c	otton.	Cotton.		Wool.		Infus. earth		Charcoal.		Sawdust.	
Date.	Cub. cent.	Ext. tem- perature, F	Cub. cent.	Ext. tem-	Cub, cent, ice melted.	Ext. tem- perature. F	Cub. cent.	Ext. tem. perature, F	Cub. cent.	Ext. tem- perature, F	Cub. cent.	Ext. tem- perature, F
Jan. 18, 8 a. m. to 11 a. m Jan. 18, 2 p. m Jan. 18, 5 p. m Jan. 18, 6.30 p. m	225 360 275 85	Deg. 98 100 101 96	959 865 865 105	Deg. 97 99 101 95	345 340 430 175	Deg. 97 99 101 95	350 360 390 185	Deg. 98 100 100 96	440 490 445 195	Deg. 98 100 108 97	440 #45 450 905	Deg. 98 100 108 97

Relative Conducting Power for Heat Calculated from Above Date.	
100   Infusorial earth	
Heate cotton	980

water drawn off during the first 10 hours is not included in the table, which is confined to the results obtained between 11 a. m. of the 18th and 6.30 p. m. of the same day. Silicate cotton stands again at the head of the list, and it may be as well to explain would be 12 inches. For half the number that this interesting substance resembles.

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The Ish and 6.30 p. m. of the seme day, Silicate cotton stands again at the head of the list, and it may be as well to explansion for 100° F is Silicate cotton stands again at the head of the list, and it may be as well to explansion for 100° F is Silicate cotton stands again at the head of the list, and it may be as well to explansion for 100° F is Silicate cotton stands again at the head of the list, and it may be as well to explansion for 100° F is Silicate cotton stands again at the head of the list, and it may be as well to explansion for 100° F is Silicate cotton stands again at the head of the list, and it may be as well to explansion for 100° F is Silicate cotton stands again at the head of the list, and it may be as well to explansion for 100° F is Silicate cotton stands again at the head of the list, and it may be as well to explansion of an inch that this interesting substance resembles cotton wool in appearance, and is produced that the sumber of temperature might be continued to the material substance resembles of degrees it would be 7 inches. The shuld be 11 inches. For half the number of the list, and it may be as well on expansion of 100° fere against the weight of the garment produce a spreading sufficient to throw a train from the track. The smaller figures against the weight of the same for a given space filled up, 3 pounds. The figures of conductivity obtained represent the warment of garments of equal thickness and equal weights. Of course, if with the two materials the weight of the garment per square foot is identical, but the thickness can equal weights. Of course, if with the two materials the weight of the garment per square foot is identical, but the thickness can equal weights. Of course, if with the two, the course of the prod





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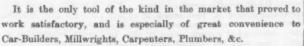
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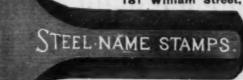
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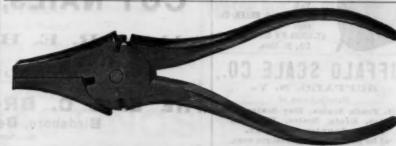
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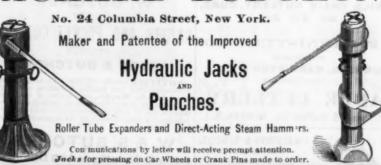
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wrought iron was laid on the floor of the structure. As if to render it more susceptible to the rays of the sun, it was painted of dark color. On cold or cloudy days it lay in its normal position. On sunny days the writer has frequently seen it bowed outward nearly or quite a foot out of line. The surface of the foot planks under this part of it became worn by the daily friction. Finally, an arrangement of bends was introduced that operated as an expansion-joint, and now no bowing takes place. Even 50° F. seems a large rise in temperature. But it must be remembered that the temperature of rails or similar objects is affected by the radiant heat of the sun as well as by the atmospheric temperature. The latter is only mospheric temperature The latter is only their initial factor. The sun's rays could easily raise their absolute temperature above

The Substitution of Steel for Iron.

(Concluded from page 5, October 2.) II. -CIVIL PURPOSES.

The use of steel for bridges, buildings, &c. has not yet become general; no examples are known of its being applied to public buildings or private houses. The earliest application to bridge-building was in the construction of the Vienna bridge over the Danube, in 1828, built by M. von Mittis. This was a suspension bridge, the chains consisting of bars of steel, 61.5 x 19 mm. in section. The chainwork was made too light being only one-fifth of the weight of the platform. Hence the bridge oscillated considerably. Several other smaller bridges, all very light, were also built across the Danube. siderably. the steel plate 64 kg. per sq. mm., or 39.7 tons per square inch. In England, in 1864, Worthington built a swing railway bridge over the Sankey Canal. It had four girders of Bessemer steel, 55 feet 9 inches by 2 feet

the company's works at Crewe in seven days, and in seven more the bridge was built. In 1883 the Brooklyn (N. Y.) suspension bridge was opened. It has a span of 1600 feet. There are four cables, each of 5000 steel wires of %-inch diameter. The platform is of steel. The weight of the central gallery is 6740 tons, and that of the cables is 2160

The disadvantages of hard steel are the following: 1, more care is required in working; 2, more labor is needed in the workshop; 3, there is dange of the bridge being too light. Steel is specially suitable for the price is reduced, steel must come into they may retain ample surface in the bearing use for these purposes.

III. -PARTS OF MACHINES.

Steel was first used in marine engines for crank-shafts in 1865, but unsuccessfully. A second trial in 1875 space-eded better, on the Caspian's shaft. Mesers. Vickers & Co., leading English makers, on December 31, 1881, had made 215 shafts of all sizes. That for the Alaska weighed 25 tons. Such shafts have been used by the Admiralty, by the Cunard, Inman, White Star, Allan, Guion, Orient and P. and O. lines, &c. At Creuzot, from 1869 to 30th of April, 1883, 4145 tons were forged in steel for naval purposes, but in the first five of these years only 55 tons were so forged. In 1874-75, the annual production rose from 102 to 750 tons. The French navy have generally adopted steel screw-shafts for the last 8 or 10 years. In Germany, Krupp, of Essen, produces large quantities of straight and cranked shafts for various customers.

Quality and Condition of Using.—The metal must be of the greatest possible re-

sistance, owing to the great strains to which the shafts are subject. On the Vickers sys-tem they are built of three and sometimes five pieces of Siemens metal, giving a resis-tance of 25 tons per square inch. The Bol-t m Iron and Steel Company use Bessemer or t in Iron and Steel Company use Bessemer or Siemens-Martin steel of less soft quality, and wi h a resistance of 28 to 30 tons. Sir Joseph Whitworth, again, prefers harder steel, giving a resistance of 37 tons per square inch. Messrs. Jessop & Son use steel from Swedish iron, with a resistance of 23½ to 27 tons. The steel preferred by Messrs Spencer & Son has a resistance of 23 tons only. The Steel Company of Scotland use the Terre Noire process and prefer a resistance of 23

Noire process, and prefer a resistance of 27 to 29 tons. The French navy requires shafts of a style similar to the Vickers.

The following figures give some idea of what may be achieved by thoroughly good steel shafts. Table of miles traveled by four Vickers scraw-shafts in yourges to and from Vickers screw-shafts in voyages to and from New York:

Britannic Adriatic. Celtic.... All these screw-shafts are still sound.

Table of revolutions and miles of four Krupp screw-shafts ·

Servia... Frisia ... Cimbria.

The disadvantages of steel shafts are usually summed up as follows: 1. Cost. 2. Danger of sudden breakage. The greater siderably. Several other smaller bridges, all very light, were also built across the Danube. The metal employed in all was hard steel. In 1862 the French engineer, Oudry, designed a bridge of Bessemer steel to join Sicily and Calabria. In 1863 steel began to be used in Holland for bridges for the State railways, at Limburg, near Maestricht. They were three in number, and were built by Sterckman & Son, of La Have. They were lattice-girder bridges, 30 m. long by 4.50 m. wide. The weight of steel in beams and crossties was 20 tons, and the resistance of the steel plate 64 kg. per sq. mm., or 39.7 for ductile enough for such a purpose. Peror ductile enough for such a purpose. Perfect homogeneneity is necessary, as any

tons per square inch. In England, in 1864, Worthington built a swing railway bridge over the Sankey Canal. It had four girders of Bessemer steel, 55 feet 9 inches by 2 feet 3 inches deep, the span varying from 30 to 40 feet. It was built by Hick & Son, of Bolton, and was tested by a weight of 3 tons per square inch. With this the maximum deflection was 1 inch, and the permanent set zero.

In 1865 a bridge, 42 m. span, of puddled steel was built across the Gotha. In 1867 a bridge was shown at the exhibition at Paris, built by Joret, of Terre Noire Bessèges steel. It stood a stationary test of 500 kg. per sq. m., and a moving one of two trucks of 11 tons each. In 1863 the same house built a similar bridge for Monte Video. In 1880 a steel bridge, with steel rivets, was built on the Missouri for the Chicago and Alton Railway. In 1880 also was built the largest rigid steel bridge in existence, over the Mississippi at St. Louis. This has three arches, the center one of 515 feet 6 inches, the others 495 feet. The hight above water is 70½ feet. The limit of elasticity in the steel is 163½ tons per square inch, and it did not break at 41 tons. In 1881 the London and Northwestern Railway Company built a steel bridge at Llandulas, North Wales, with not break at 41 tons. In 1881 the London and Northwestern Railway Company built a steel bridge at Llandulas, North Wales, with a length of 222 feet. It was very rapidly built to replace another without delaying train service. The materials were made in rendered perfectly homogeneous and free from strain.

To get over this difficulty the author pro-poses to hollow the shafts after forging by boring them out of the solid, the internal by boring them out of the solid, the internal diameter being about one-half of the external. These hollow shafts should afterward be annealed, and the cranks may either be forged on to them or fastened by bolts like the "built-up" shafts used in England. This system should not increase the cost of the shafts, since the cylinder the cost of the shafts, since the cylinder taken out from the interior ought to com-pensate for the expense of boring. The hollow shaft will not weigh more than threesnop; 3, there is dange of the bridge being pensate for the expense of boring. The too light. Steel is specially suitable for weigh more than three-swing bridges, &c., where lightness is indispensable. In the bridges recently built of the saving in dead weight the inertia of the steel by the Creuzot Works the quality of moving parts will be less, and there will be metal employed is as follows: Limit of elasmetal employed is as follows: Limit of elasticity, 25 kg. per sq. mm. (15.5 tons per square inch); resistance, 50 kg. per sq. mm. (31 tons per square inch); elongation, 20 per cent. on a test-piece of 100 mm. (4 inches), equivalent to 16 per cent. on an ordinary test-piece of 8 inches. Steel manufacture is undergoing a change by the perfection to which Messrs. Thomas and Gilchrist have brought their process of making Bessemer steel from phosphoric ores. In Germany especially, castings have been made very brought their process of making Bessemer steel from phosphoric ores. In Germany especially, castings have been made very rich in phosphorus. One house at Joeuf, near Longwy—that of Messrs. Wendelhas recently sold to the Eastern Railway Company 200,000 tons of rails of this metal, inappropriately called dephosphorized steel. It has this peculiarity that, while semi-hard and taking temper well, it contains very little carbon—2 per cent. only. Steel for flowing and cross girders has not yet come into use to a large extent. It is still more expensive than iron, and besides would be more flexible. Nevertheless, as they price is reduced, steel must come into

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reduction of one-third the thickness, as compared with iron, was at once allowed.
Again, in 1861 a reduction of one-half the thickness was allowed by a ministerial circular in the construction of boilers of steel, providing a resistance of at least 60 kg. (37 tons) was obtained. The boilers of the ironclads Provence, Revanche and Savoie were made of steel between 1861 and 1864. In 1862 15 locomotives for the Midi Railway were made with steel boilers, the metal being crucible steel by Petin and Gaudet, having a resistance of about 36 tons and 17 to 10 per cent. elongation.

In 1863 the Orleans Company obtained from the same firm some steel plates with a resistance varying between 38 and 45 tons, and an elongation varying between 10 and 7 per cent. The thickness of the plates in these boilers was reduced from 13½ to 8 mm. A less resistance was, however, soon preferred, and in 1869 the Orleans Company placed the limits between 32 and 38 tons, with an elongation of from 12 to 22 per cent. In 1871, after the German war, great exertions were made in the renewal of rolling stock, &c., and some of the steel used, from want of homogeneity, failed in practice. The boilers of three frigates made of steel had to be very shortly replaced by iron. A locomotive burst on the Midi Railway, and another on the Orleans Railway. In spite of this the advantage of steel was recognized, not only for hulls of ships, but also for their boilers, as far, at least, as regards the shells. The flues, in which most of the accidents had ccurred, are still made of iron in the French

In England, however, the use of steel as a material for complete boilers has received a large extension. It was stated at the meeting of the Iron and Steel Institute at Paris, in 1878, that in England there were 4000 steel boilers as iron in existence in the Eng-lish marine. In the French navy steel is now universally employed, and the Creusot factory has turned out about 350 tons of steel plates yearly for the navy during the last six years. On the other hand, the French merchant marine has not yet fol-

The boilers built before 1875 failed from the heterogeneity of the metal. The steel, being hard, suffered considerably in punching and riveting. Corrosion—attributed by Siemens to presence of manganese—is con-sidered by the author to arise mainly when slight flaws or cracks are present, arising either in manufacture or in service, and to be less important the milder the quality of the steel.

Quality, &c. - As to this, it is sufficient to cite the present requirements of the French navy, which as as under for cold tests:

Resistance. 26 tons 26 \*\* 25 \*\*

The hot tests are the same as for shipbuild-ing. Under the press the plates should bend double without showing traces of rupture. The thickness of a steel plate is estimated in the same way as an iron one, taking into account the difference between the metals in resistance. At present a reduction of 20 to 25 per cent. is allowed in France, the last 25 per cent. Is allowed in France, the last figure being that permitted by Lloyd's rules in England. As to the working of boiler plates, they should be worked in the same way as plates for ships' hulls. All rivet holes should be drilled, not punched.

In conclusion, the author cites the report of the jury at the exposition of 1878, which way be supposed up as follows:

nmed up as follows: The accidents which have occurred with steel boilers are due to: 1. Insufficient malleability. Irregularities in manufacture. 3. Defective methods of working. The first two causes have now disappeared, and the third is rapidly disappearing.

#### Ventilation of Coal Cargoes.

In late years the question of how to properly ventilate coal cargoes and avoid, as far as possible, the disastrous consequences of spontaneous combustion has received a good spontaneous combination has received a good deal of attention, and the crude ideas for-merly entertained in regard to this matter are being rapidly crowded out of existence. Some nine months ago we referred to the be, and that forcing currents of air through a cargo could never be expected to secure freedom from danger. It may be interesting in this connection to direct attention to the recent report submitted to the Committee of Lloyds (England) by the British Board of Trade concerning the surface ventilation of a cargo of 2050 tons of coal carried in the vessel Sutherlandshire, while making the voyage from Hull, England, to San Francisco, in 1883. Large vessels bound for San Francisco have to encounter elevated temperatures, and at the same time the coal, as in this case, is generally in great mass, and the liability to accident is thus much greater than in vessels carrying smaller quantities and for shorter distances. Any successful precautionary measures adopted are consequently entitled to special attention. From the above-quoted report it appears that great advantages were gained from following out a certain system of tubes inserted at different points in the cargo, thus enabling a ready determination of the temperature ir the interior of the coal mass. The tube system was carried out under instructions given in the report of the British Royal the President. Commission appointed several years ago to inquire into the causes leading to the sponta-neous combustion of coal while in transit in ships, and has apparently given very satisfactory results.

It is stated that while the Sutherlandwas fitted with a box ventilator on each which is the largest yearly amount ever re-hatch—vis., fore, main and aft—passing ceived in the history of the institution. down through the body of the cargo. There Frem convict labor the receipts were \$7000 was also one 14-inch cowl ventilator passing in excess of last year.

through the forecastle and main decks; one trunk ventilator, with skylight top, leading through midship house and main deck; one i8-inch cowl, abaft mainmast, leading to the water tanks, and two 12-inch cowls through poop and main decks to storeroom right aft. The alterations made were as right aft. The alterations made were as follows: The two aft ventilators were boxed and continued through the storeroom deck to the cargo. The tank ventilator was opened out to the cargo at the main deck, and the trunk and forecastle ventilators were accepted, being suitable for surface ventilation. The three wood-box ventilators in the hatchways were removed and testingpipes put in their places.

#### The British India Wheat Crop.

The British Indian Agricultural Department, in answer to a resolution of the Indian Government of the 10th of March, has made its report, which is summarized as follows: The total wheat area in British India is about 26,000,000 acres. The total yield in a fairly good year is put at 252,000,000 bushels, giving an average output of 9½ bushels per acre. In the Punjaub, on the whole, the yield in 1884 was above an average. The average area under wheat is 7,000,000 acres, and the average yield 74,400,000 bushels. The yield for 1884 is placed at 80,000,000 bushels. In the Northwestern Provinces and Oude the area under wheat was a full average. The yield, however, was in many districts short, owing to the deficiency in the fall and winter rains. The area of this division is 6,200,000 acres, with an output in 1884 estimated at 60,000,000 bushels. The area under wheat in the Presidency of Bombay in 1884 was up to average, except in Scinde, where it was in 1878, that in England there were 4000 boilers, for the construction of which 14,000 tons of steel were used; 1000 of these belonged to the North Western Railway Company. In April, 1881, Mr. Parker estimated the number of steel boilers on board English ships at 1100, weighing 17,000 tons. In 1883 he also said there were six times as many steel boilers as iron in existence in the English marine. In the French navy steel is now universally employed, and the Creusot factors has turned out about 350 tons of the foregoing is as follows: the foregoing is as follows

residencies.  1jaub  thwest Provinces.  nbay  tral Provinces  tive States	6,200,000 1,600,000 4,000,000	Yield—total bushels. 80,000,000 60,000,000 16,000,000 40,000 000 48,000,000
Total		

3,200,000 acres less than first stated. There may be some other Indian States not included in the foregoing. The crop in the Native States is estimated, and the estimate is not based on actual returns. It is inferred that with a good rainy season following an average wheat crop, so as to secure the autumn harvest, one-fifth of the wheat crop will be available for export. Still, the export in the last few years, taking the aggregate crop, has not been 7 per cent. of the crop.

#### The Mexican Postal Treaty. Advices from Washington are to the effect

Mexico have now been practically agreed upon, and one of the first acts of the new Postmaster-General will be to sign the docurestmaster-teneral will be to sign the docu-ment. The leading features of the treaty, so far as they affect correspondence from the United States to Mexico, may be briefly summarized as applying our domestic rates of postage to all correspondence, prepay-ment in full to be compulsory. The main point of difference between the two countries, which has protracted the negotiations so long, was the desire of the Mexican Government to secure free transportation over the railroads of the United States for Mexican mail for other countries. This country was not willing to yield this point, because it would necessitate a similar concession to Canada, and would then cost the United States a sum nearly equal to that now paid to us by Great Britain for the transportation of her Australian mails across the continent, which amounted in 1882 to more than \$115,000. The point was made by the United States that, while the provision upon which Mexico insisted would be to the temporary advantage of that country, it would in the end prove to be a serious embarrassment. It was represented that, with the extension of railfact that the methods generally adopted were almost the reverse of what they should be, and that forcing currents of in the south American Continent with those of North American Continent with the categories of the Continent with the Co mail from South America for the United States and Canada, and nearly all of the mail from there for the rest of the world, would pass through Mexico and over Mexi-can railways, and if Mexico were now to insist upon the free transportation through the United States of her mail for other coun-tries, and this country were to yield, then by considerations of comity Mexico would hereafter be compelled to make a similar concession to the Empire of Brazil and to the South American Republics for the free transit over her railroads of their mail for other countries. This argument convinced the Mexican Minister that it was unwise to insist upon the point in controversy, and upon his representation of the facts the Mexican Government has yielded the point, and the treaty will go into operation as soon as it has been signed by the Postmaster-Genas it has been signed by the Fostmaster-tren-eral and ratified by the Mexican Senate. There is no doubt of its ratification by Mexico and in the United States. A postal treaty does not need to be ratified by the Senate, but is completed by the signature of the Postmaster-General and the approval of

Some branches of trade continue profitable, notwithstanding the dullness of general trade. The annual report of Warden Green, It is stated that while the Sutherland-just submitted to the Commissioners of shire was at San Francisco three coal-laden Charities and Correction, shows that during vessels arrived on fire, and that one of them | the past year the Kings County Penitentiary an American ship—had been on fire 53 New York, made a profit of \$17,704.42. The ays. When detained the Sutherlandshire receipts from all sources were \$91,704.42.

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#### Topography of Machines."

BY OBERLIN SMITH

The object of this paper is to briefly call attention to the loose system, or rather entire lack of system, prevailing in our draft-ing-rooms and machine shops, in writing and speaking of the relative locations of the various parts of machinery.

In designing and building a new machine, specially if of a new type, numerous verbal explanations are necessary-from de signer to draftsman, and from either or both to pattern-makers, machinists and other artisans. These may be written or oral, but are usually both. They should, oral, but are usually both. They should, however, in all cases be of such a character as to be clearly expressed in words alone, without the need of arbitrary signs in writing or gestures in speaking. Thus, in these ing or gestures in speaking. Thus, in these days, when time is so valuable a commodity, days, when time is so valuable a commodity, especially with the higher grades of workers, much of it may be saved if a designer can verbally express his ideas without ambiguity—perhaps to a stenographer for record, perhaps through a telephone to a distant assistant.

To carry out this matter to an ideal state for perfection would involve a referred in

of perfection would involve a reform in mechanical nomenclature and the coining of a number of new words, together with the establishment of a system by which any part of a machine could be definitely located and its entire construction described in a table of words and figures, without the use of any drawings at all. Such a scheme is briefly outlined further on, and its partial application to actual work, but a more important pur-pose of this paper is to urge a reform in the use of a few words pertaining to location and motion which are commonly employed by draftsmen and machinists in a very ambiguous way.

An instance of this is where some point on

adrawing is spoken of as to the right or left of some other given point or line, because it appears so upon a side view, while, in the machine itself, it is really backward or forward of the given point or line. Another instance is where some member of a machine is supposed to have considerable individuality of its own and has some important side, which its christener chooses to call its front. facing in a different direction from the main front of the machine itself. This is the case in an ordinary lathe, where the main front is toward the operator and where the front side of the bed or of the carriage, or the front end of the cross-slide screw, are very front end of the cross-slide screw, are very properly spoken of, yet where the terms "front" and "back" spindles mean, absurdly enough, the left and right spindles respectively. Again, the right end of the live spindle is usually called its front end, while the same term "front" is applied to the left end of the dead spindle. Numerous other cases might be mentioned that are not less foolish and are even more liable to cause mistakes, but these will suffice as examples. mistakes, but these will suffice as examples.

The writer, in his own practice, has found

the remedy for these evils simple enough by merely establishing the following positive rules: 1. Every machine must have some one side assumed as its front, and another side at right angles to this and the one that side at right angles to this and the one that is usually beneath, assumed as its bottom. Opposite to these respectively are, of course, the back and the top, while the right and left are at the right and left of a person standing in front of the machine and facing toward it. This applies to stationary machines, and the side assumed as the front boold awally be that toward which the chines, and the side assumed as the front should usually be that toward which the operator is habitually placed. 2. In the case of traveling machines, such as boats, loco-motives, reapers and other vehicles, the end that goes forward must, of course, be called the front. As the operator is upon such a machine (instead of outside of it) and with his face forward, the right and left sides are reversed in relation to the front and hack. reversed in relation to the front and back. This would seem to break up the unity of the system, but it need occasion no practical inconvenience if the names of the different sides are definitely fixed upon and distinctly sides are definitely fixed upon and distinctly marked upon all the views in the drawings.

3. In stating the location of any part in relation to some other part, or to a main center line or reference plane, the only terms to be used are these six: "Front of," "back of," "right of," "left of," "above," "below." If the point to be located is in a diagonal direction from its reference point, its place is usually defined by two or more of these rectangular measurements, and not by its rectangular measurements, and not by its diagonal distance. In some cases, however, it is more convenient to give its actual diag-onal distance and otherwise define its position line drawn through the reference point. Thus, the back gearing spindle or "quill' of an engine lathe might be located as so quill' or an engine inthe high the located as so many inches from spindle axis and so many degrees above back, instead of giving the number of inches back and up. The former way is here better (as it is in most cases of geared shafts), because the actual distance is a definite one, being the sum of the radii of two pitch circles. Of sum of the radii of two pitch circles course these shafts can be located by their axes alone, as can all cylindrical, conical and other round bodies or spaces. The writer has found this accurate use of

omewhat prolonged absence. The necessary explanations were sent partly by letter and partly by telephone, and, although the phraseology used, with its frequent "ups," "backs" and "lefts," might not have been the most poetically flowing English, it had the merit of meaning exactly what it meant, and nothing else.

The ideal system before referred to is in

the same line of thought, but goes much further. The idea is to locate any desired number of points in a given machine upon the same general principle as positions are fixed upon the earth's surface by latitude and longitude, but the directions of measurement would be at right angles to each other and would be three in number—that is, until such time as Section D of the American

POWER PRESSES. \*A paper read before the American Association for the Advancement of Science, Section D, at Philadelphia, September 10, 1884.

Association shall have reached a state of development in pure mathematics which will justify it in calling for measurements in a "dream space," as Professor Proctor has aptly called it, of more than this number of

In this system all measurements would be taken perpendicularly from three imaginary "reference planes," which would preferably, "reference planes," which would preferably, in most cases, be exterior to the machine and would, of course, be the three adjacent sides of an inclosing cube. They could be in any desired position, but would perhaps be as convenient as any way if placed at the bottom, left and back. In such cases all measurements would be either "up," "right" or "forward," and could be conveniently abbreviated as "U," "R" and "F," respectively. Thus it is obvious that any desired tively. Thus it is obvious that any desired number of points upon the surface of any member of a machine (or, for that matter, any other object) might be successively located simply by a line or column of figures representing inches or some other uniform unit of measurement, each prefixed by one of the three letters mentioned above. To avoid writing the letter each time, it (or the word for which it stood) might be placed at the top of a column in which all the figures relating to that "dimension" might be written. Matters could be still more simplified by taking a set of horizontal measurements, all at one given hight, which might be expressed once for all at the top of the colnmn. After these were taken another set could be made in a horizontal plane at a distance above the last one which represented the degree of delicacy required. For defining the shape of a cast-iron frame of a medium-sized machine, for instance, a set of measurements at each inch in its hight would usually be sufficient.

The method above outlined would, if fol-

The method above outlined would, it followed out strictly, require a ridiculous number of unnecessary measurements if such objects as shafts, pulleys, cog-wheels, &c, were to be defined by points upon their surfaces. Happily, however, the matter could be enormously simplified by locating such members of a machine by their axes and one of their ands only. Such a system and one of their ends only. Such a system would be of extended practical use only by having a machine made up of as many standard shapes as possible, each of which could be individually located in a very few measurements, perhaps in some cases angular, instead of lineal.

A modification of the proposed exterior ref-erence planes would sometimes be desirable by making two or more of the planes inter-sect, and one or more of them to lie in some main axis or center line of the machine. This would most likely be the case where symmetry of design would allow a set of measurements to be repeated in an opposite measurements to be repeated in an opposite direction. If these were given in detail it would be necessary to use the words "down," "left" and "back," as well as "up," "right" and "forward" These could be expressed as "D," "L" and "B," respectively, unless it should prove better to use only the first given set of letters and put minus signs in front of them when reverses minus signs in front of them when reverse

directions were to be given. This topographical system, so to speak, has not yet been worked out by the writer to the stage that fits it for shop practice, but he is studying upon the subject as he has leisure, and hopes at some future time to get it into shape. As outlined above it is in a very crude condition, but the principle is capable of wide application in practical engineering, as combined with a system of drawings, if not actually supplanting them. The writer has frequently found it very useful in "figur-ing up" rough sketches and memoranda of an existing machine which it was desirable to add to, alter or produce, and of which drawings had to be made. In such a case the floor answered as one of the a case the floor answered as one of the reference planes, while a side and rear wall—or, in lieu thereof, a pair of large drawing—boards, fastened in a vertical position at right angles to the floor and to each other—answered as the other two planes. For taking the measurements a large "surface gauge" or "scribe-block," together with a graduated scale of some sort, fastened, for the time being, perpendicular to the plane from which the distances are being taken, are very convenient tools. convenient tools.

This definite locating of all important

parts from common starting places, and independently of each other, will be found vastly more accurate and complete than the method used by many draftsmen where a lot of measurements are taken at random, from some place to any place, and where one is apt to find afterward, when too late for remedy, that some "key-note" in the survey has been left out entirely.

In plotting down such a survey as has just been referred to it will be found of great been referred to it will be found of great benefit to use cross-ruled drawing paper, preferably graduated to inches and their halves, quarters and eighths, the inch lines being the heaviest. These lines should be numbered from one edge of the paper each way, and their use is just as important as are the lines of latitude and longitude in copying a map drawing.
In conclusion, the writer would say that

no new principles are here claimed, but merely the application of some very old The writer has found this accurate use of terms of great advantage in explaining new work to his assistants, and has, on a quite recent occasion, been enabled thereby to have them hurry to completion an intricate have them hurry to completion an intricate machine, the design of which he was obliged to leave unfinished when starting away for a have long been employed by the geographer, the topographical engineer, and even by the landscape gardener and the railway con-

> Annual Meeting of the Pennsylvania Steel Company.—The Pennsylvania Steel Company held an annual meeting on the 1st inst., in their office, 208 South Fourth street, Philadelphia, and elected the present officers rhisderphia, and elected the present omcers and directors for the ensuing year, as follows: President, S. M. Felton; secretary and treasurer, E. F. Barker; superintendent, Luther S. Bent; directors—Samuel M. Felton, Edmund Smith, William Matthews, H. H. Houston, Charlemagne Tower, William W. Spackman and Francis Thompson, of Boston. After the meeting a prominent officer of the company said the outlook of the steel trade in Pennsylvania for the coming year is bright. The annual report shows that the

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he said, "plenty of orders, and have succeeded in keeping our workmen employed the year through. The prices received, however, were much lower than in former years, which materially lessened our profits. The demand for steel is now steadily on the increase, and we anticipate that the coming year will be a successful one, as far as work is concerned, although the stagnation of the money market will have the effect of keepmoney market will have the effect of keep-

### TRADE PUBLICATIONS.

#### The Frue Fanning Machine.

We have received an illustrated and de scriptive pamphlet of the Frue fanning machine, made by Messrs. Fraser & Chalmers, Fulton and Union streets, Chicago, Ill. which contains an account of its invention and first introduction in some of the Western silver mines. The main advantage claimed for the fanner is in the treatment of a stampmill pump at one cheap operation, producing clean concentrations with but little loss of value. The cuts in the pamphlet illustrate the Frue fanning machine and the Embrey concentator, each with two views, the latter ma chine being also made by the same company. An inclosed letter bears high testimony to the merits of the Frue fanner.

#### Horizontal Automatic Cut-Off Engines.

The new catalogue of the New York Safety Steam Power Company, of 30 Cort-landt street, which has just come to hand, gives a complete and interesting description of their horizontal automatic engines, with tables of sizes, speeds and powers, and much taction of sizes, speeds and powers, and much other information. Perspective and sectional views and plans and elevations are supplied, showing all the essential details, and enabling the reader to form a very good idea of the arrangements adopted. The company's horizontal engines have of late attracted some attention, and to those who are desirous, of obtaining further particulars. desirous of obtaining further particulars about them the catalogue may prove a very convenient source of information.

#### Mining Machinery and Steam Engines.

The M. C. Bullock Manufacturing Company, of Chicago, Ill., announce, in a re-cently-issued catalogue, that they have pur-chased the sole right to manufacture, sell and use throughout the United States (prior and use throughout the United States (prior licenses excepted) all the patterns and styles of rock drills made under the original Leschot patents, and also a large number of patents granted to Mr. M. C. Bullock, which control some valuable improvements on diamond-pointed rock drills. The catalogue is very fully illustrated throughout, containing engravings of various rock drills. Lifting ing engravings of various rock drills, lifting jacks, steam pumps and hoisting engines, &c., together with detailed descriptions.

#### Special Machinery for Steam Users.

We are in receipt of a four-page pamphlet devoted to brief descriptions and to illustra-tions of the Korting double-tube injector, exhaust steam induction condenser, furnace exhaust steam induction concensor, furnace blower for steam boilers, steam-jet chimney ventilators, and a number of other appli-ances for which Mr. A. Aller, of 109 Liberty street, New York, is the agent. The pamphlet, as may be expected, conveys only a very general idea of the arrangement and functions of the machinery referred to, and more specific information may be obtained by applying to Mr. Aller.

#### The Shipman Engine.

Mr. C. E. Little, 59 Fulton street, New York, has sent us an interesting little pamphlet devoted to the Shipman engine, for which he is agent. The engine, as we understand it, is built by Mr. G. H. Shipman, of Rochester, N. Y., and is described at some length in the pages now before us. It is adapted for the supply of small powers, and may possibly prove an object of interest to some of our readers.

Riehlé Bros., of Philadelphia, have issued a neat little catalogue giving full informa-tion concerning their standard scales and trucks. It is illustrated throughout, and, in

#### Engineers' Supplies.

We are in receipt of an interesting little trade catalogue brought out by a German firm, Messrs. Dreyer, Rosenkranz & Droop, of Hanover, and giving particulars and illustrations of their engineers' supplies. As

#### Power-Transmitting Machinery.

The Walker Manufacturing Company, of Cleveland, Ohio, have sent us two catalogues, one being essentially of a descriptive char-acter, while the other contains detailed price lists of their different manufactures. Both will unquestionably prove welcome sources of information for the firm's customers.

#### The Baltimore Car Wheel Company.

The recently-issued catalogue of the Baltimore Car Wheel Company, of Baltimore, Md., is an unusually attractive specimen of its kind, both as regards appearance and arrrangement. It embraces 58 pages, is handsomely bound and illustrated, and supplies a large amount of valuable information Chain Bolts, Chain Door Fasteners. to purchasers of the company's manufac-

past year was much better for the workmen than for the company. "We have had," Cummer engine, referring to its valve and he said, "plenty of orders, and have sucgoverning arrangements, excellence of workman-hip, simplicity of mechanism, &c. Engravings are also given of their independent air pump and condenser, and the Ballantine ice and refrigerating machine built by

#### Railway and Machinists' Tools and Supplies.

The new catalogue of Messrs. Manning, Maxwell & Moore, of 111 and 113 Liberty street, New York, issued a week or two since, is one of the most elaborate and carefully-prepared specimens of trade literature which we have seen for some time. Cover-ing, as it does, an exceedingly wide range of subjects, the reader will find it to contain illustrations and descriptions of an almost endless variety of mechanical devices, and its value is thus restricted not merely to that of an advertising medium. The volume is 10 x 13 inches in size, embracing 660 pages and 2716 engravings. We have no doubt that its perusal will prove both interesting and valuable to all who will give it the necessary time and attention

#### Sunk in a Calsson.

A singular accident, unusual in its character and remarkable in the escape of the actors from death, occurred at Havre de Grace, Md., on the 1st inst. The outer shell or coffer-dam of caisson No. 9, which is being sunk as the foundation for one of the piers of the new bridge of the Baltimore and Ohio Railroad Company, now in process of construction, paparaing the Suc. in process of construction, spanning the Susquehanna River, gave way. The crib and air-lock shaft were flooded, and the working chamber rapidly filled. Most of the men got out safely before the accident occurred, but out safely before the accident occurred, but six men were imprisoned in the submarine chamber. The caisson is larger than any of the others sunk for the bridge. It is 60 feet long and 40 feet wide, and at the time of the accident the working chamber was 60 feet below the surface of the water. The entrance to the caisson proper is made through a perpendicular iron shaft about 3 feet in diameter, with foot and hand holes on either side. It is divided into locks, each lock have diameter, with 100 and and notes on either side. It is divided into locks, each lock hav-ing a gate. When the men descend, the lock tender withdraws the air and the gate falls, and the last man down lifts the gate. When the bottom gate is opened the air rushes in, thus holding the top gate in position. The same process is repeated until they reach the working chamber, which is lighted brilliantly by electricity. The air in the chamber, beyond being a little oppressive, is said to be not unpleasant. The work of excavating is being vigorously pushed night and day, on Sunday as well as week days. Each shift is allowed 20 men and a fore-

The men were working under a pressure of 28 pounds at the time of the collapse, and when the lock flooded, the only entrance or exit to and from the caisson was cut off. The air apparatus, however, fortunately continued to work, and this was the men's only salvation. They remained in their only salvation. They remained in their prison helpless until rescued by the superintendent, John O'Brien, who conceived an ingenious plan and proceeded to put it into practice. The outer lock was 5 feet under water, and the next lock, which was 15 feet deep, was full of water. Mr. O'Brien made a coffer-dam of boards, and calked it tightly with caking and coment. Then he belief with oakum and cement. Then he bailed out the water, descended and raised the flooded lock and bailed that out. He then descended through his rudely-constructed shaft and rescued the six men from their perilous situation, which they had endured for five hours. Gen. William Sooy Smith, one of the contractors, and Col. William Patton, the company's engineer, were there, and viewed the operations with anxiety.

#### When to Expect Better Times.

In their circular for October 1, Messrs. Rhodes & Co., of Cleveland, indulge in the following prognostications:

The proverbial impatience of American business men seems to demand that, because now that the crops are assured, the stimulus should be immediately felt; and, indeed, if trade were very active we might expect such a result, but with the existing depress-ion we have no reason to hope for a return of confidence and a revival in business until a large portion of the crop is mar-keted, which will not probably be until after the first of the coming year. We had very poor crops in 1881, but such was the activity in the iron trade that immediately succeeding the poor agricultural return we had a very lively fall and winter business, and did not begin to feel the evil effects illustrations of their engineers' supplies. As a specimen of German enterprise in this direction it is certainly worth notice, showing, as it does, that the value of this method of bringing their goods to public notice is being appreciated by German manufacturers. The book is neatly arranged, very fully illustrated, and will favorably bear comparison with some of those brought out by American firms. its consideration. We think, however, that one wish is common to patriotic men of all parties, and that is that the result will be so decisive as to leave no ground for a dispute as to which candidate has a fair majority of the electral votes, as was the case eight years ago. A disputed Presidential succession would surely neutralize all the good that we have reason to hope for from our splendid agricultural returns

Trade-Marks and Labels .- Touching the distinction between trade-marks and labels, Commissioner of Patents Butterworth has decided that the proper construction of the statute is that the subject matter of an application for a label shall be that which may be properly claimed as a label, and not be merely subject matter for a trade-mark. But the statute does not mean to imply that, if certain subject matter is found to be in The Cummer Engine.

A number of interesting pamphlets recently issued by the Cummer Engine Company, of Cleveland, Ohio, contain illustration as a trade-mark, it can nevertheless be registered as a label, for it may not be descriptive of the quality or nature of the goods, and therefore fail to constitute a label.

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**EVERY DESCRIPTION OF SHEAR** 

The Leading Numbers for the Eastern

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WARD & PAYNE

Strongly Recommend

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The recommendation being that both blades can be taken as under, thus greatly facilitating the whetting and grinding of the Shear.

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No. 50 Single Bow,

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No. 200 Double Bow.

The magnitude of their production, aided by the most perfect combination of machinery, enables them to quote prices which distance competition.

SHEFFIELD, ENGLAND.

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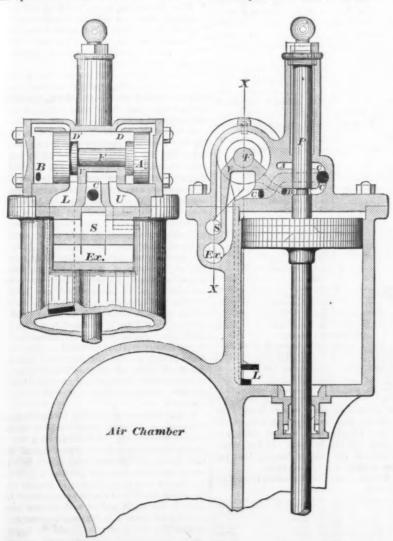
cars; numbi kinds 100 c numbi ag-sci

Mr. M. S. Harlow, of Hoboken, N. J., was mr. M. S. Harlow, of holoscel, N. J., was recently granted a patent for an ingenious and simple arrangement of valve gear for direct-acting steam pumps. This gear, of which sectional views are shown in the annexed engravings, consists essentially of two moving parts, viz., the auxiliary valve P, ar ing parts, viz., the auxiliary valve P, arranged so as to form a continuation of the piston-rod, and the main valve V, moved by the plunger F. The left-hand cut is a section along the line X X of the vertical section. S represents the steam supply-pipe; Exthe exhaust; L the main steam port to the lower end of the cylinder, and V that to the upper.

Harlow's Valve Gear for Direct-Actin; 650 large and small springs, 18,700 washers, 800 brasses, 400 axles, 800 wheels, 1200 pounds of waste and 800 gallons of oil. Thus is a total of 85,500 pieces handled, and 68,-04c nails. These cars, when completed and drawn out on the track, formed an unbroken line 3200 feet long, and weighed 1,800,000 pounds."

#### Underground Electrical Conductors.

The operation of the valve is as follows: of that city refers to them as follows:



SECTIONAL VIEWS OF HARLOW'S VALVE GEAR FOR DIRECT-ACTING STEAM PUMPS.

As represented in the cut, the main piston has reached the upper end of its stroke; the auxiliary valve P has connected ports B and C, exhausting the steam from that end of the auxiliary cylinder. Steam enters the other end through the port D, and thus reverses the main valve. When the main piston has reached the lower end of its stroke the ports A and C communicate over the end of the auxiliary valve P. Steam enters through the port D<sup>1</sup>, reversing the main valve for the up stroke, thus obtaining a positive motion of the main valve without the aid of tappets. springs, combined levers, of the auxiliary valve P. Steam enters through the port D', reversing the main valve for the up stroke, thus obtaining a positive motion of the main valve without the aid of tappets, springs, combined levers, cams or similar devices. By the arrangement of the ports in the auxiliary cylinder the piston is prepared from striking the the piston is prevented from striking the cylinder by means of steam cushions.

Another feature is that, if the main valve should be moved too far by its momentum, the cushion will return it to a fixed point at either end of its stroke, leaving the main

#### One Hundred Flat Cars Per Day.

The Chicago Inter-Ocean of recent date, speaking of rapidity of work in the shops of the Pullman Palace Car Company says: "It having been said that the company were slow It. in filling their orders, the men in the freight shops, under the supervision of Superintendshops, under the supervision of Superintendent G. A. McArthur, were recently allowed to show the rapidity of their work. The usual number of flat cars turned out is 25, but on that day 100 were built. This means that work was begun on 100 flat cars at 6.30 o'clock in the morning, and at 6 o'clock in the evening they were completed and painted, some of them even being properly lettered. This task was an unusual undertaking, and could not be done two days running, as it would completely exhaust the men. For this labor the number of men was not increased at all. All of the hands did their utmost, the different gangs vieing with each this system the current from two dynamos of equal power is carried over three wires accesseded in building five cars each. The result was that two gangs succeeded in the building of equal power is carried over three wires instead of four. The positive pole of one are was six minutes. To build these of the other, and from the connection is run of one ear was six minutes. To build these of the other, and from the connection is run didle wire, as it is termed, of the system the current poles form the other two wires. If the dynamos of castings, 170 in number, or 17,000 in 100 cars; 24 different kinds of bolts, 174 in number, or 7,400 in 100 cars; 24 different kinds of bolts, 174 in number, or 17,400 in 100 cars; 24 different kinds of nuts, 174 in number, or 17,400 in 100 cars; 24 different kinds of nuts, 174 in number, or 17,400 in 100 cars; 24 different kinds of nuts, 174 in number, or 17,400 in 100 cars; 24 different kinds of nuts, 174 in number, or 17,400 in 100 cars; 24 different kinds of nuts, 174 in number, or 17,400 in 100 cars; 24 different kinds of nuts, 174 in number, or 17,400 in 100 cars; 24 different kinds of nuts, 174 in number, or 17,400 in 100 cars; 24 different kinds of nuts, 174 in number, or 7,000 in 100 cars; 24 different kinds of nuts, 174 in number, or 7,000 in 100 cars; 24 different kinds of nuts, 174 in number, or 17,400 in 100 cars; 24 different kinds of nuts, 174 in number, or 17,400 in 100 cars; 24 different kinds of nuts, 174 in number, or 17,400 in 100 cars; 24 different kinds of nuts, 174 in number, or 17,400 in 100 cars; 24 different kinds of nuts, 174 in number, or 17,400 in 100 cars; 24 different kinds of nuts, 174 in number, or 17,400 in 100 cars; 24 different kinds of nuts, 174 in number, or 17,400 in 100 cars; 24 different kinds of nuts, 174 in number, or 17,400 in 100 cars; 24 different kinds of nuts, 174 in number, or 17,400 in 100 cars; 24 different kinds of nuts, 174 in number, or 17,400 in 100 cars; 25 different kinds of nuts, 174 in number, or 17,400 in 100 cars; 25 differ

the pipes, and the system is kept constantly under pressure, to make amends for leakage. In the exhibition the system is shown in actual operation, the line used being that laid down by the Pennsylvania Railroad, and containing 18 telegraph circuits in active operation, besides the telephone wire

the american sectional underground system ports are divided when they enter the cylinder, so that when the piston approaches the end of its stroke a part of the steam is cut off and the speed of the piston is reduced; also when the stroke is reversed only a portion of the steam at first enters the cylinder, thus giving a motion approximating that obtained by the crank and fly-wheel. This allows the water-valves time to regain their seats without shock, prevents the piston from striking the heads, and, in connection with the steam valve gear, makes a steam pump that is claimed to be practically noiseless at any speed.

The American sectional underground system is exhibited in operation. This system consists of a cast-iron viaduct laid underground, with arrangements for carrying through them without endangering insulation. At intersections and other convenient places manholes are arranged, which are large enough for a man to descend and arrange wires and make connections without difficulty. Where a large number of wires with a series of trays, one above another, on which may be arranged any number of wires. This system consists of a cast-iron viaduct laid underground system is exhibited in operation. This system consists of a cast-iron viaduct laid underground system is exhibited in operation. This system consists of a cast-iron viaduct laid underground system is exhibited in operation. This system consists of a cast-iron viaduct laid underground system is exhibited in operation. This system consists of a cast-iron viaduct laid underground system is exhibited in operation. This system consists of a cast-iron viaduct laid underground system is exhibited in operation. This system consists of a cast-iron viaduct laid underground system is exhibited in operation. This system consists of a cast-iron viaduct laid underground system is exhibited in operation. The American sectional underground sys-

been so far perfectly successful.

The Edison system of underground conduction, shown at the principal entrance, is adapted not merely to the Edison system of incandescent lighting, but to all purposes of electrical conduction. For the Edison system of lighting a special arrangement is necessary on account of the very large curcessary, on account of the very large cur-rents which are employed. It consists of a wrought iron gas-pipe of ordinary character, through which is run the heavy copper con-ducting wires previously insulated with Edison's insulating tape. In some cases these wires are still further protected from chance contact by a further wrapping of rope. Into which hardens, but without cracking. The composition is a secret. The pipes so pre-pared are laid under ground, being cut and screwed together like ordinary gas-pipe. One novel feature of the Edison system is

the three-wire system of conduction. In this system the current from two dynamos

were the current of the normal intensity without danger of heating. If the intensity is double the wires can be made one-fourth the size, and, as one wire is saved out of every four, the total saving is represented to be

nsulator. A suitable conduit is built with air-tight manholes and connections, and by means of a steam engine and a fan a current of dry air is forced into the conduit. A system of protection from induction is adopted tem of protection from induction is adopted for telephone wires. At the bottom of the conduit is arranged a small railway with an arrangement by which a small electric motor may be used to carry wires along the conduit. It is pointed out that if the arrangement of conduits was sufficiently extensive the electric railway would make an efficient parcels post in addition to its principal use. Next the Continental is shown of Clearance desired for drilling metals of This is a conduit arranged along the curb, where it can be more readily examined than where it can be more readily examined than in the street. Arrangements are made by which steam-heating pipes may be arranged with the electric wires in the same conduit The Philadelphia and Seaboard Telegraph and Cable Company exhibit a system which consists of a series of boxes made in suitable lengths in which the telegraph wires are placed and surrounded by a special insulating ompound.

The Union Electric Underground Com

pany exhibit in the annex a sample of their conduits, which consist of iron tubes, together with their method of insulating the wires to be passed through them. The National Un-derground Electric Company exhibit their conduit and a manho The conduits consist of tin tubes embedded in an artificial stone. Examples of terra-cotta, asphalt and artificial-stone tubes are also shown. The Cosmopolitan Elec-tric Underground Telegraph, Tele-phone and Electric Lighting Company exhibit a section of their underground conduit. It consists of a terra-cotta pipe, along which is set at suitable intervals a series of perforated plates of some nonconducting material, and through these holes are drawn the wires it

nection is, however, made with the middle wire from each side wire, and thus the current is higher in intensity a smaller wire can be used than would be necessary

additional feature in this machine is the adjustable legs and the ease with which the bed can be raised and lowered or given an inclination, as circumstances may require.

Adjusting the press in this manner is frequency of the current of the curre to make the press of the greatest convenience in doing different kinds of work. The clutch 62½ per cent.

The Continental Underground Cable Company have an exhibit in the gallery. This system depends upon the use of dry air as an isolated Assignment of the continent of the continent of the constructed so as to withstand severe strains. This press is built by R. C. Purvis, system depends upon the use of dry air as an isolated Assignment of the continent of the constructed so as to withstand severe strains. This press is built by R. C. Purvis, 4152 Elm avenue, West Philadelpia, Pa.

#### Hand's Twist-Drill Grinding Attachment.

additional feature in this machine is the adjusted legs and the ease with which the bed can be raised and lowered or given an inclination, as circumstances may require. Adjusting the press in this manner is frequently a great convenience, especially where heavy dies are to be put in. The hight of the bed may be increased or diminished, so as the pulse the pression of the grantest convenience. the cut. Raising the segment gives more clearance, and depressing it gives less. A very slight movement serves to change the clearance materially. Drills of any length can be ground, as the chuck arbor has a hole in it large enough to allow a 1/8-inch drill to pass clear through.

#### Oil Refuse for Steam-Raising.

of the engines which is driving the air compressing ma-chinery. The oil, which is of a thick consistency, is at present almost a waste product, being the residue after the distillation of the comm reial oil from the shale. The oil, according to an account now before us, is account now before us, is stored under pressure in a tank, near the furnace, the two being connected by tubes. The fire-bars of the furnace are taken out, and a cylin-drical retort is suspended in drical retort is suspended in the furnace and surrounded by a spiral tube. From the oil reservoir and from a water main two pipes with valves convey oil and water to the



HAND'S TWIST-DRILL GRINDING ATTACHMENT.

wood, and no description of their design or use are submitted.

New Adjustable Power Press.

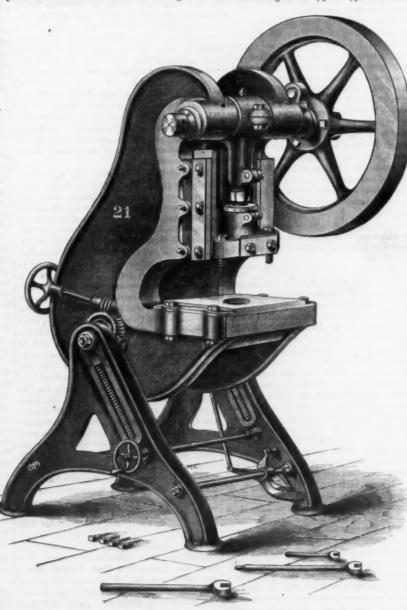
The press shown in the accompanying engraving is of the parabolic form, and its special features are stiffness and strength in

these holes are drawn the wires it is designed to protect. Models of two conduits are shown in the gallery, labeled respectively the Anderson conduit and the Underground conduit of W. Hendley, Washington, D. C. The models are of wood, and no description of their design or left hand drill can be ground with equal facility. The purpose of the manufacturer is converted into steam, which is carbicously description of their design or be used with the ordinary grinding application. issues. The oil is then admitted in the same manner, and carried by another heating tube to the same jet, which it reaches in a nearly gaseous state. It is then caught by the superheated steam, and thrown against the convex bottom of the retort, the force of the impact breaking up into vapor any portion of the oil which the heat may not have already converted into gas.

In a short time, continues the article, the retort and heating tubes become red-hot. The steam has become a dry gas, which is thoroughly intermixing with heated carbon. The force of the jet sucks into the center of the flaming gases a current of air, which completes their combustion without producing smoke, dirt or residue. The result of the whole process is almost perfect combustion-an immediate and intense heat which consumes all the products, or, in other words, leaves no residue to be cleared away. The advantages claimed by the inventor of this system are that the retort acts, first, as a boiler or steam generator to start the fire; second, the retort is an atomizer, breaking all possible lumps into atoms; third, the retort is a deflector or director of the flame, distributing it equally to all parts of the furnace; and, fourth, its in-ternal cubic area acts like the air chamber ternal cubic area acts like the air chamber of a pump to keep a steady flow from the jet. The experiment—for it can be regarded only as such at present—is stated to be giving every satisfaction. While this may be the case it is questionable whether in the end commercial success would follow, and, while yet in the experimental stage, it would be by no means unusual should the invention show the experiences of many others in kindred fields and now long forgotten.

Two Big Bridges for the Northwest. -The bridge to be built across St. Louis Bay, between Duluth and Superior, for the Northern Pacific Railroad, will be nearly I mile in length, divided into three sections, follows: Drawbridge, 246 feet; the fixed truss span, 160 feet, and the pile bridging, 4290 feet. By the terms of the contract the entire structure is to be completed by the last day of January, 1885, and work will be commenced as soon as a few details are arranged. The bridge which is being built for the Wisconsin Central Railroad, 4 miles east of Stillwater, Minn., will be 2340 feet in length and built entirely of iron resting on stone piers. There are nine piers, each resting on piling driven into the river bed about is feet until scale in other resting on piling driven into the river bed about 15 feet until rock is reached. The piers are 34 feet 6 inches by 11 feet 10 inches at the bottom, 20 feet by 6 at the top, and about 46 feet high above low-water mark. about 46 feet high above low-water mark. The spans average about 159 feet in length, the channel span being somewhat longer than the others. The trestle approach on the Wisconsin side is to be of iron resting on square stone piers, of which there are 25 pairs. The superstructure will be entirely of iron, the bottom of the channel span being

Industrial Gazette reported a sale of 6000 tons of No. 1 foundry at \$15, showing a lowness of price almost unprecedented, It is added that the sale was speculative, the purchaser (a prominent Pennsylvania capitalist) making the deal as an investment, expecting to realize a handsome profit within a



## The Iron Age

#### Metallurgical Review.

New York, Thursday, October 9, 1884.

JAMES C. BAYLES, JOHN S. KING.

Publisher and Proprietor Rusiness Manager

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#### Plain Talk from a Priend.

The Philadelphia North American, which has always been a stanch supporter of the manufacturing interest, indulges in some very blunt language in a recent issue. Referring to the manufacture of pig iron, it

At present there are but few works in Eastern Pennsylvania capable of producing iron at a cost which repays for the manufacture. Any sugar, cotton or woolen manufacturer knows too well where he would be were he to use without im-provement the machinery he employed in 1861. provement the machinery ne employed and yet too many of the pig-iron plants are practically in that condition. How many furnaces tically in that condition. How many furnaces-exclusive of those owned by steel works—are capable of producing 100, 75 or even 60 tons per day? How many are in a position to make pig iron at \$15 per ton, f.o.b. cars? The cases in which the answer will be an affirmative one are so few that they can be counted on one hand. The remedy to be successful must be here. Let the stockholders or partners be willing to put up furnaces of the capacity and with the improvements such as exist at many of the furnaces in Western Pennsylvania. and they will find that they will be able to compete successfully with their rivals, and even at present depressed prices have something on the right side of their ledgers at the close of the year. The first outlay will be great, but the return will in

This is excellent, even if unwelcome, advice. Economy of manufacture is not alone to be secured through the reduction of There are appliances not yet universally adopted which enable producers of pig iron to effect a very large saving in ing additional buildings, so that when brisk the quantity of fuel used to the ton of metal turned out. The product is also increased. so that fixed expenses are distributed over a production than ever. Iron rolling mills greater tonnage, effecting a reduction of cost in that respect. Mr. Robert W. Hunt, experimenting in that line to see what can imposed by the foreign buyer as an essential of Troy, had this in mind when, in the course of his inaugural address as president of the men should not stand still during this period money in Wall street nowadays, correspond-American Institute of Mining Engineers, delivered at the Roanoke meeting in June, 1883, he said :

Unfortunately, when pinching times afflict us when the necessities of curtailment of costs arise, we at once attack the wages problem as the certain and only way of salvation. That point of reduc-

I do not mean that labor should not bear its share of depression, as it certainly always will of prosperity. But if we would give deeper thought, and not permit the human proclivity for hitting some other body to satisfy us, we should make greater and more lasting savings. You may make a heavy reduction to proceed a solution which we have the savings and savings and savings and savings and savings. reduction in wages, and save but a small amount per ton of product; and when times change the reduction must be restored. But save a few per cent. of loss in the processes of manufacture, and your aggregate is the same, and that reduction in cost remains permanent.

It happens, however, that the furnaces to which the North American calls attention have reached the limit of their ability to compete, even after reducing wages to the lowest point possible, and have blown out so generally that scarcely half of them are now in blast. It is not because there is not a market for at least part of their product, as Ohio and Virginia furnaces have been selling their product to a considerable extent in Eastern markets for several months. The reason is simply that these idle Eastern furnaces cannot compete with the prices named by their outside competitors. Instead of to continue in the business and hold their sections, they have retired from the contest and await with impatience the advent of higher prices. Iron ore of the best quality not so dear as it has been, and improved to be worth repeating. equipment will considerably reduce its cost per ton of metal. Freights are very low, and there is but a comparatively short haul at any rate to the consumer. Yet with a bountiful supply of the necessary materials, with labor anxious for employment at low figures, and a nearness to markets which ought to insure them the inside track against all distant competitors, the furnace owners exceptions, make no effort to retain their trade.

That it is possible to make pig iron at a profit even at prevailing prices is shown by the recept declaration of a dividend by a well-known Eastern Pennsylvania company which is solely engaged in the manufacture of pig iron. Another company, which had for years struggled along with antiquated furnaces, making a profit only during times of high prices, determined to remodel its furnaces, and the result is that now it is not making pig iron at a loss, although prices are very low. Possibly the North American comes very close to the lowest cost attainable when it asks, "How many are in a position to make pig iron at \$15 per ton, f.o.b. cars?' but we believe that with a properly-constructed furnace, equipped with the most improved blowing and heating apparatus and economically managed in every respect, pig iron could be made for that figure at many points in Eastern Pennsylvania where furnaces are now standing cold and have been so standing for months.

It can be truthfully said that more pig iron is now being made than the country can consume, but this is only true of the country generally. We believe that the production of the Eastern part of the country is below the local consumption. Were it otherwise, with outside lots constantly being marketed at all Eastern points from Philadelphia to Portland, stocks would increase rapidly at Eastern furnaces. The production of pig iron in the East could be increased certainly to some extent if it were sold at a rate low enough to control the entire trade of this section. What the measure of that extent may be is a matter of conjecture, but there certainly must be room for a considerable expansion of Eastern production. Prices realized here now are not very profitable to the outside fur naces which sell in this market, and it would not require a heavy reduction in price to shut them out.

The furnacemen of the Lehigh Valley particularly have long enjoyed special preminence among Eastern pig-iron makers. Their iron commands a better price .uan that of other districts, being preferred whenever the difference in cost is not unreasond to reach all Eastern co sumption. Yet there are a very considerable number of furnaces out of blast in that see tion, in several cases an entire plant standing idle. It is true that the Lehigh Valley has a less percentage of furnaces idle than very many other districts, but its location, its proximity to some of the best markets of the country, should enable it to run several more furnaces, if not many more, than it is now doing. Are the idle furnaces being modernized during this interval of rest? Is their blowing capacity being increased, or their hot-blast apparatus being improved, or are the lines of their stacks being altered to permit faster driving and greater production ! Manufacturers in other lines are improving this dull period by putting in improvements, such as better engines and more modern machinery, and they are even erectbetter advantage and turn out a greater are introducing steel-making process be done most economically. Eastern furnaceof general reconstruction, but fall in line and march abreast of their most progressive

The responsibility of individual workmen for their own safety when engaged in haz-

competitors in other sections of the country.

court decisions. The opinion has prevailed port field it would appear that no rule can the navigation interests are looking in this in many directions that an employer is responsible for the safety of his workmen in chants. On the contrary, each individual whatever they may be doing, but it begins firm, before embarking in foreign ventures depressed industries. If the building of to appear of late that, unless the individual of any magnitude, must seriously consider workman exercises due caution at all times, the extent of its resources and its possible this country on a scale commensurate with the responsibility is removed from the employer and becomes his own. A case in point appears in reports of recent English the smartest win. decisions. A workman named Owen Jones was killed by a fall during the demolition of an old church in Liverpool. His widow's suit for damages resulted in a victory for the defendants. The latter were a firm of contractors. Some suggestive remarks were made by the judge before whom the case was tried. The man who was killed was at work in a tower about 40 feet from the ground. It appears that, without orders, the laborers piled loose stones and rubbish on the wooden floor instead of lowering them to the ground by steam cranes. The floor, which was admitted to be rotton, gave way, and Jones fell to the earth and was killed. introducing improvements to enable them His widow brought suit, and the defense insisted that the man came to his death ground against the manufacturers of other through no fault of his employers, but rather through his own negligence. The justice "non suited" the plaintiff, and remarked that he wished he had the power to make can now be had at very reasonable rates, her solicitor pay the costs of the defendants. perhaps as cheaply as ever before. Fuel is It was a small case, but the points of it seem

#### Credits in the Export Trade.

Information gathered through consular eports to the Department of State, as re ently published in these columns, affords abundant evidence that credit stimulate trade; that, in fact, without credit trade in many directions would be well-nigh impossi of Eastern Pennsylvania, with a few notable ble. Through a carefully-adjusted credi system English and German merchants have obtained control of nearly all the South American markets, and thus far have been enabled to hold their ground against all competitors. Americans have repeatedly en deavored to obtain a foothold by offering a superior class of goods, and at the lowes prices, but in most instances with indifferent success. The old-established methods have the preference with them, and the reason usually alleged is that the European manufacturer, perhaps because he is better advised wares more exactly to the wants of the consumer. Admitting that all this may be true, though we are inclined to the belief that American manufacturers are usually prompt in meeting the wishes of their custo respect to patterns of goods, does it follow that American merchants must accept the alternative of adopting an extended and apparently hazardous credit system in distant parts of the world, practically beyond the pale of all law, so far as concerns their interests, or refrain from any attempt to enter the field? The consular reports above referred to show substantially that the trade of most of our American neighbors is based on credit. In Cuba, we are told, "the only trade based wholly on cash is "is the retail trade. " " The " is the retail trade. 'credit system is a long chain which ex-'tends from the producer abroad or at "home, through numberless middlemen, "link by link, to the consumer." In Yucatan "cash transactions are extremely rare." Similar remarks are made concerning South

American countries.

In order that Americans may more successfully extend their South American commerce, now that our shipping laws are deemed more auspicious, we see it openly advised that "the only practicable mode of doing this is by imitating the British, who establish foreign houses, and by conforming to the customs of other people rather than by endeavoring to persuade them to adopt our customs." Pertinent to this suggestion we remember that an extraordinary spirit of enterprise was aroused among certain export traders immediately after the Philadelphia Centennial Exhibition, their determination being to capture the foreign ably great to a consumer. The valley is well markets vi et armis. Goods were sold on credit to an extent that might reasonably surprise the most sanguine, and a wide distribution was effected. It only remains to observe that some are still waiting for the return of their money. Much of the testimony being received by the South American Commission, now or lately in conference with merchants in New York, favors a wide expansion of credit if we would take the trade which we court. For example, S. Samper & Co., of this city, who do an extensive business with Spanish-American countries, remark that "manufacturers in "the United States treat their customers "too rigidly," whereas manufacturers in England "in every respect recognize that it is the purchaser, not the seller, that is "to be accommodated." Obviously, the suggestions thus volunteered carry with them the assumption that United States merchants entering into engagements of times return they will be able to work to this character must command large pecuniary resources in their own right, and have at control banking facilities on a scale commensurate with the demands for "time" condition in seeking his patronage. Cheaper favors Cisatlantic enterprise at this later

power of endurance under the varying conditions liable to be encountered, where only

#### Course of the Tin-Plate Market.

The course of the tin-plate market on this side has for some time past been a puzzle to most people in the metal trade. Although shipments this way have been but little in excess of the fiscal year 1883, the net import into the United States during the 12 months ended June 30 last being 224,688 tons, against 215,253 the previous year, the price of tin plates is lower at present than ever before, while stocks on this side are known to be lighter than they have been for many months past, just at a time when the demand is usually greatest. On January 3 the price of ordinary brands of tin plates averaged \$5.14; on October 3, \$4.85. The average of former years was as follows :

PRICE OF TIN PLATES IN NEW YORK.

ш.		***
	January.     \$5.88       February     5.70       March.     5.75       April     5.67       May.     5.66       June.     5.48	July     \$5.50       August     5.40       September     5.57       October     6.66       November     7.28       December     7.11
r	18	80.
- 8 8 n	January     \$6.11       February     8.72       March     8.68       April     8.00       May     6.75       June     5.88%	July     \$5.45       August     5.70       September     5.78       October     5.46       November     5.40       December     5.39
	18	81.
tehn	January     \$5.32       February     5.38       March     5.87       April     5.87       May     5.27       June     5.42	July     \$5,42       August     5,52       September     5,47       October     5,52       November     5,82       December     6,25
-	PREVIOUS	PRICES.
B	July 1, 1874 \$8.71 April 28, 1876 6.58 May 5, 1877 5.97	February 28, 1878 \$5.66 March 31, 1878 5.66 April 30, 1878 5.72
1	September 7, 1877 6.00	May 31, 1878 5.37
t	October 19, 1877 5.97 December 20, 1877 5.85	June 15, 1878 5.35 July 15, 1878 5.33
9	December 31, 1877. 5.77 January 1, 1878 5.75	October 3, 1878 5.18 December 18, 1878 5.28
-	The general tin-pla	te export from Eng-

land during the first seven months of the by observing correspondents, adapts his year was 174,479 tons, against 156,179 in 1883, and 157,115 in 1882. It has, therefore, been at the rate of 300,535 tons per annum, against 267,735 last year.

In former years the shipments from Eng-

mud were:			
Year.	Tons.	Year.	Tons
		1877	153,226
1872	118,088	1878	155,240
1878	120,638	1879	197,849
1874		1880	217,699
1875	139,363	1861	239,300
1876	132,564	1889	265,02

Although there has been a considerable increase of tin-plate shipments from England so far this year, it has been to other countries, and not this way. In fact, the American market has been a great source of disappointment to makers in Wales, and they have been compelled to more assiduously cultivate other fields, while not losing sight of our market, which to them always remains the most important, our import having increased 78 per cent. during the four years 1880-83.

To some extent the lack of buoyancy in prices is probably due to the great popularity which steel plates have been gaining on this side for about a year past, a circumstance which may eventually revolution ize the tin-plate market. Aside from this the situation here seems sound enough Crops have been unusually large, including fruits; provisions are cheap, and so is petro leum; building has been fair all over the country, and the consumption of tin plates must have been very large, to judge from the low stocks, in spite of an ample importation. To some extent tin plates may have suffered from the general decline in merchandise of all sorts since the beginning of the year, and the utter discouragement which has seized on all speculation for a rise since the May panic.

Since 1879, usually in October, people have been looking for a "boom," but nobody thinks of it now, although prices are, on the whole, lower than they were in 1878. The consumer has no reason to be sorry that the era of booms has departed for the time being; what he wants is a moderate ruling for raw material, and steadiness, and h finds both in tin plates so far this year, which have fluctuated less than any other article, and in nine months only declined 6 per cent. It is not likely that they will decline further at present, while at any moment the revival of the legitimate fall demand may restore them to what they were worth early in the year.

#### The Revival of American Shipping.

question, which has become an absorbing houses engaged in foreign trade it is quite natural to expect to find it a constant theme of discussion. Associations of shipowners and assemblies of the various craftsmen connected with the building, supplying and runing more nearly than in former years with ning of ships seldom meet without taking rates prevailing in England, certainly some action suggestive of the impatience there are very few sellers at that rate, and day, unless, perchance, a panic like that of country will turn its earnest attention last May, accompanied by a sudden curtail- toward the development of its ocean carrying ing secured work for a considerable time ment of loans, upsets all calculations. In trade. And even those who are not directly ahead. The arrangement among the manu

be laid down applicable to any class of mer- direction for an awakening of business energy which will restore activity to our ships for ocean service were to be started in the magnitude of our foreign commerce, a tremendous impetus would be given to business in so many lines of manufacture that every industry would be affected. At a recent meeting of representatives of pilot associations of most of the coast States, which was held in this city, Capt. Bedford Pim, of the British Navy, made an address, in which, among other things, he said: "Your shipping has fallen off simply from the tendency of your countrymen Westward, where, in railroading, in ranching and in farming, money is to be made much more rapidly than in the old-fashioned line of commerce on the ocean. Reaction will take place sooner or later-I believe sooner than you think."

While Captain Pim did not give the causes of the original decline in our shipping, he very well stated the reason why no general attempt has been made since to build it up and restore it to its former magnificent proportions. Now, however, as railroad building has been so overdone that it may take years for the country to grow up to the point at which our railroads will all find profitable employment, and as our industrial development has, with but few exceptions, supplied us with ample facilities for making everything we need, and yet there is an abundance of capital in the country seeking profitable investment, the time would seem to be at hand when the work of internal development can be temporarily suspended by some of our leading capitalists, who ought to turn their energies and abilities to this comparatively new field. Captain Pim evidently entertains this view of the question, as he made frequent references in his address to his belief in the early birth of a "magnificent mercantile marine." It was remarkable that he failed to take the usual British ground that our tariff policy interfered with our shipping interests, but, on the contrary, he expressed his regret that his own country was an adherent to free trade.

It may be necessary for the United States Government to take some decisive steps toward encouraging the building of a mercantile marine in order to divert capital in that direction. Nobody will invest in an enterprise that does not promise a profit. As there is now an oversupply of vessels on the ocean, trading to almost every accessible point in the world, and several nations are striving for oceanic commercial supremacy, competition by Americans would be hopelessly unprofitable without some special advantages conferred whenever American goods are carried. What the nature of such encouragement should be is in dispute, and there are strenuous advocates of various chemes, but it now seems probable that the general interest being taken in this question will influence Congress to make a decisive step in some direction which will be acceptable to those interested. The appointment by the President of a commercial commission to visit Central and South America was done in accordance with an act of Congress, the passage of which showed that our Representatives are alive to the importance of doing something to expand our trade with countries which coname such productions as we have to offer. Their report will undoubtedly deal with the necessity of more frequent communication with our Southern neighbors. The Brazilian onsul-general at this port recently said: The great bulk of the Brazilian trade is in English hands, and the cause of this rests with the Americans. The United States might control the bulk of the Brazilian trade if they would, but the merchants here do not go about it in the right way. The first requisite for successful trade between the Empire and the Republic is frequent and rapid communication between the two countries by an American line of steamers." Foreign testimony to the necessity of our action in this respect being so strong, it is to be hoped that efforts in the line of resuming our old place among the commercial nations of the world will be redoubled by those of our citizens who realize the importance of the movement.

#### Recent Trade Developments.

Some rather significant occurrences have recently taken place in the iron and steel Prominent among them is the matured scheme for restricting the production of steel rails. When the movement in this direction was undertaken a short time ago there were those who regarded the attempt with many misgivings, having little faith that the manufacturers would agree upon any plan in the nature of a combination. Increasing interest is being taken in this At present, however, there is every reason to believe that the manufacturers are at last topic in many business circles. Among the in accord, and that the reckless competition which resulted in depressing prices to an abnormally low point has been checked. Prices are much firmer, and sales to some extent have been made at higher prices. It may be possible to place orders with some companies at \$29, but it is asserted that with which they await the day when this that \$30 at mill will soon be the minimum rate, most of the mills now in operation havtion of cost is so easily reached. Understand me; ardous work is of late being emphasized by reviewing this matter of credits in the exLocation of Furnaces

New England
New York
New Jersey

Spiegel . ennsylvania.

Lehigh Valley
Schuylkill Valley
Upper Susquehanna Valley
Lower Susquehanna Valley

Pittsburgh...
Allegheny Valley...
Shenango Valley...
Youghiogheny Valley...
Juniata and Conemaugh Valley...

Maryland Virginia North Carolina

West Virginia.
Ohio—Mahoning Valley.
Eastern, Central and Northern
Hocking Valley.
Hanging Rock.

Bituminous or Coke.

Capacity per

9 7,530 2 585 5 3,100 2 685

14 4,569

1,451

2,260

2,950

930

600

7,100

1,000

550

8,370 25

5,060

1,705

1,540

1,410

400 4,875 580

540

7 3,810

400

IS II

4 1,416 12 2,770

has any attempt been made to establish a count, which shows that, while unprecedentdicate a strong buyer who has faith in the approach of a turning point in the iron trade. All these occurrences have their dark side, it is true, as restriction of production and low prices mean depression in business, but, on the other hand, they indicate that the on other branches of the trade outside of eculative ventures will not often pass of the public will soon be acceded to. without being embraced.

#### Condition of the Blast Furnaces of the United States, Oct, 1, 1884.

Herewith we present our regular quarterly report of the condition of the blast furnaces of the United States. In a condensed form the table presents the following results: CONDITION OF BLAST FURNACES, OCTOBER 1, 1884.

		n blast.	Out of blast		
Fuel.	No.	Weekly capacity.	No.	Weekly capacity	
CharcoalAnthraciteBituminous		8,669 28,539 40,410	175 141 146	16,818 82,460 50,186	
Total	234	72,618	462	100,914	

As compared with the condition of the furnaces on July 1, a considerable shrinkage facture of steel nails there has been no time in production is apparent, there being 45 that they were not behind their orders.

	1	in blast.	Out of blast.		
Fuel.		Weekly capacity.	No.	Weekly	
Jan. 1. Charcoal Anthracite. Bituminous	78 109 101	8,936 98,894 45,365	169 122 123	16,008 25,555 41,967	
Total	286	83,225	414	88,580	
April 1. (Charcoal Anthracite. Bituminous	62 107 100	8,718 27,612 49,286	185 121 126	16,654 26,605 89,420	
Total	260-	. 85,561	482	82,679	
July 1. Charcoal Anthracite. Bituminous	80 101 98	10,280 26,949 47,630	167 180 127	14,725 28,765 44,211	
Total	279	84,880	494	87,701	

In the following table a comparison is made between the condition of the furnaces on October I a year ago and at the present time :

-		o. last.	Weekly capacity.		
Fuel.	1883.	1884.	1883.	1884.	
Charcoal	104 122 114	69 86 79	10,686 29,790 50,452	28,539	
Total	340	234	90,987	72,618	

This table shows that there has been a diminution of over 31 per cent. in the number of active furnaces within a year, and a decrease of over 20 per cent. in productive capacity of the furnaces in operation. For the last seven years the relative condition of the furnaces on October I has been as fol-

NUMBER OF FU	KNAC	Hills I	N BLA	AST, O	CLOR	EH I.	
	178.	179.	'80,	'81.	'82.	188.	'84.
Charcoal	88	97	158	153	158	104	- 69
Anthracite	88	198	148	148	157	122	86
Bituminous	80	119	198	134	128	114	79
Total	951	387	494	485	448	340	234
NUMBER OF FURNA	CES	OUT	OF B	LAST,	OCT	OBER	1.
	178.	'79.	180.	'81.	80.	'88.	184.
Charcoal	186	150	116	119	98	145	175
Anthracite	185	98	96	87	79	110	141
Bituminous	133	90	91	87	111	110	146
Total	454	847	808	298	276	305	402
M. 155 5 45	-			***			

It will be noticed as a significant fact that fewer furnaces are now in blast than on in cannel coal October 1, 1878.

The Westinghouse air brake, so extensively used both here and abroad, has been brought into special prominence in England lately, Engineering, giving an account of the prog-where the public are demanding that it shall ress made by the electric light during 1883. into special prominence in England lately, be applied on all railways, to the exclusion of vacuum and other brakes, which have proved to be less efficient. Since the accident at Penistone, on the Manchester, Sheffield and Lincolnshire Railway, last July, in He stated that among manufacturing estab-which over 20 persons were killed and as lishments the installation at the Cail workmany more injured, the engineering press has been incessant in urging that the Westinghouse or an equally reliable automatic brake be used on all the English railways. The conclusions reached as to the efficiency of many of the railway brakes now in use in England have received further confirmation from the locomotive engineers, who, before all others, are interested to the extent of life and limb in having the best one of their number sent a letter to the London Times, in which he expressed himself of the maintenance, taken together at 15 per together at 15

very strongly in favor of the Westinghouse minimum price, but their agreement is to brake, saying that with none of the other work half time only for the first six months systems did he feel the same security, and of 1885. The mills now standing are expected to continue so until prices advance apply the hand brakes. The prominence considerably. The other important occur- which was given to this letter in many rences referred to are the large sales of of the engineering journals called forth a pig iron which have taken place within a second letter from a similar source, in which short time. At St. Louis some 6000 tons of the writer corroborated all the statements No. 1 foundry were sold, it is said, at \$15 to of his fellow-engineer. Such strong evidence, a Pennsylvania capitalist on speculative acupheld by both theory and practice, and bearing common testimony to a danger and edly low prices have been reached, there are the means of avoiding it, would undoubtedly persons who believe that iron is a safe in- before this have resulted in the desired vestment at such figures, and a reaction is change had it not been that certain parties bound to come which will bring them a largely interested in English railways, as well profit. A sale of 13,500 tons of car-wheel as in a particular brake, have put forth pig iron is reported to have been made in every endeavor-even, it is said, to the Alabama at \$20.50. This, also, is a re- extent of tampering with the accident remarkably low price, but the extent of the turns-for the purpose of detracting from sale and the amount of money involved in- the merits of the Westinghouse to the advantage of some other brake and their own predilections. Seemingly as a proof of the efficiency of the Westinghouse brake there occurred in England some weeks ago a railroad accident closely resembling the one at Penistone in everything except loss of life, day for getting iron and steel below cost is the escape in the second instance having rapidly waning. There are sharp eyes fixed been due to the excellent working of the Westinghouse brake. Despite all opposition, pig iron and steel rails, and chances for therefore, it is highly probable the demands

There seem to be two erroneous impressions abroad regarding steel nails. One is that they are much harder to cut than iron nails, and the second that they are not being introduced very rapidly, the trade being very slow to take hold of them. The reverse is true. The nails at the Riverside Iron Works, Wheeling, recently cut in one week 7564 kegs of steel nails. This is the largest output ever made by any factory in the world working 55 hours per week and making standard weights of nails. On the other hand, the demand has more than kept pace with the product. It is asserted that few articles have ever been introduced to the hardware trade that have won favor so quickly as steel nails. It is asserted that since the Wheeling mills began the manufurnaces less in blast now than then, with That the steel nail is a success is evidenced 13,213 tons less weekly capacity. The by the fact that one of the Wheeling mills shrinkage extends throughout the three classes of furnaces. The following table shows, for comparison, the condition of the furnaces on the 1st of January, 1st of April and 1st of July:

by the fact that one of the Wheeling mills that has been delaying completing its projected Bessemer plant until the result of the shows known jected Bessemer plant until the result of the objected Bessemer plant until the result of the shows, for comparison, the condition of the furnaces on the 1st of January, 1st of April and 1st of July:

by the fact that one of the Wheeling mills cent., represent £736. Assuming a mean of 500 hours lighting per annum, there must be added on this account. 0046d. per careel hour, which will bring the total cost to 076d. The total expense is £2.44 per hour, and 1st of July:

The Wear of Steel Rails.

M. Count has published in the Revue or equal to the cost of 7167 cubic feet of gas at 6/40 per 1000 feet of 2000 nails.

#### SCIENTIFIC AND TECHNICAL.

#### Phosphorus in Coal,

To a recent number of the Comptes Rendus M. Carnot contributes a short account of his observations upon the origin and distribution of phosphorus in coal and cannel. The author recognizes the fact that the presence of phosporus in coal ashes has long been noticed by MM. Le Chatelier and Durand-Claye, who have demonstrated the possible importance of this constituent in the metallurgical and other uses of coal and coke. The object of M. Carnot's researches has been to obtain more exact information of a quantitative kind on this subject. By careful examination of the organized coal of Commentry, M. Carnot has determined the proportions of phoshorus for four types of the vegetable constituents of the examples examined. Coal, unorganized, examined in bulk, does not contain much ammed in bulk, does not contain much phosphorus, although the proportion varies in different localites. On the other hand, the cannel with which it is associated contains a much more considerable quantity of phosphorus. This difference was first observed with samples from Commentry, and the author procured specimens of coole observed with samples from Commentry, and the author procured specimens of coals and cannels from other deposits in order to see if the same results held good. The following are the proportions determined by analysis: Lancashire cannel, 0.02852; Wigan cannel, 0.02246; Newcastle cannel, trace; Glasgow cannel, 0.00572; Virginia cannel, 0.02771; Naphtha-schist of New South Wales, 0.01956; Autun Boghead (free from fish scales), trace: Frioul Boghead (Austria). fish scales), trace; Frioul Boghead (Austria), c.c6275. All these cannels except the last two belong to the carboniferous deposits. Microscopic observations upon thin plates of cannel show this substance to have been of cannel show this substance to have been formed of accumulations of decomposed vegetable matter of very diverse nature. There can, however, be detected in it, oftener than anything else, a considerable number of spores, or pollen grains, generally very irregularly scattered. M. Carnot thinks that to these may be attributed the high, but irregular, proportion of phosphorus The Cost of the Electric Light in

#### France. A paper was recently read by M. Ph. Dela-

haye before the Société Technique de l'Industrie du Gaz en France, says London He commenced by a brief account of the inventions of the year, and then turned to the question of expense, as compared with that of gas, founding his conclusions upon figures derived from typical installations. shops was among the most interesting, as it comprised both lamps. nated is 251,880 square feet, and the number of lights is 177, of which 94 are arc lamps and 83 incandescence lamps. The cost, without land and buildings, was £4900, and the main-The cost, without

Kentucky
Hanging Rock
Western region and miscellaneous
Tennessee
Georgia Alabama
Indiana
Illinois.
Michigan
Wisconsin
Minnesota.
Miscouri 1,710 140 . . . . . . . . . 16 IO 2,038

Missouri Texas Utah 

at 6/9 per 1000 feet, a quantity of gas which M. Delahaye does not think will ever be M. Detahaye does not think will ever be brought to yield the same amount of light as is furnished by the electricity. He next takes the case of the Grand Magasins du Printemps. The lights burn five hours per day for 300 days in the year, with the exception of 30 Jablochkoff candles in the basement, which are in use nine hours per day. The annual are in use nine hours per day. The annual cost for candles, carbons and electric lamps is 60,900 francs (£2436); the cost of the motive power (490,065 horse-power hours) is motive power (490,005 horse-power hours) is 39,200 francs (£1568); the expenses of the staff are 33,000 francs (£1320); the amortization and interest, at 10 per cent., 68,400 francs (£2736); and the maintenance, at 5 per cent., 29,200 francs (£1168). The total expense is thus 230,700 francs (£9228).

M. Delahaye institutes two comparisons between this and gas lighting. First, he estimates what would be the price of a gas installation and what it would cost per year: installation and what it would cost per year; and, second, what consumption of gas corresponds to the light furnished by the electricity. In the former case, assuming that there would be 3000 gas burners, giving 9.5 candles each, and taking the price of gas at 6/9 per 1000, and adding thereto 33 per cent. for amortization, interest, supervision, &c., the yearly expense is 221,625 francs (£8365), or

At the Tunbridge Wells Gas Works, says tried during the past year with marked success. The process consists in mixing lime with the coal before it is put into the retorts, thus obviating the necessity of purifying the gas from sulphur after it is made. The nuisance and trouble of cleaning cut the lime purifiers is thus avoided. At Tunbridge Wells the coal used is New Pelton, mixed with 2½ per cent. of cannel, and this is mixed with 5 per cent. of lime (which has been partially slaked with its own weight of water) The mixed coal and lime are ground and incorporated by passing through a mill with toothed rollers. The limed coal is then the retorts the gas passes through a St. John carbureting apparatus, which prevents the formation of naphthaline, and is drawn to ed both are and incandescence the condensers by means of a steam-jet ex-The total superficial area illumithe condensers by means of a steam-jet exto the scrubbers, where it is cleaned from ammonia by falling water, and finally, after passage through the oxide-f-iron puit goes to the holders. The original e The original extractenance per hour is 1 07d., for the arcs and tion of the sulphur is favorable to the pro-10d. for the incandescence lamps, the power cess of gas-making; the oxide-of-iron purirequired being 1.38 horse-power for the fiers are found to last much longer without former, and 10 km. for the second. The total being opened, the lime purifiers are disworking expense is 19/2, or .003d. per carcel pensed with altogether, and there is an in-

CONDITION OF THE BLAST FURNACES OF THE UNITED STATES, OCTOBER 1, 1884.

(Compiled for The Iron Age.)

Charcoal.

Capacity per

165 I3

349

580 26 1,469

> 21 1,135

Capacity per

854

3

51 46 24 16

24 41 IO 790

3,279 4,630

220

in blast.

2

10

935

310

470

1,000

Anthracite

Capacity per

160

6,915 . . . .

30 6 20

14

18

19 15 15

16

14 2,730 21 3,355

3,355

600

Total

M. Couard has published in the Revue Generale des Chemises de Fer some interestof the wear of steel rails on the Paris-Lyons-Mediterranean Railway since 1874, on straight and level lines, inclines and curves, and in stations and tunnels. The present article is devoted to the consideration of the results of observations on the wear of steel rails on straight and level sections of the way. Rails delivered from seven different steel works had been laid, and from the results of their wear it appears that the rate of wear of rails of the same manufacture was nearly the same for various sections of way. The following are the general results for successive periods of service:

rails has also been recorded, and it app ars that the wear is at the rate of 1 mm., or ½ that the wear is at the rate of 1 mm., or ½ that the same as electricity. According to the latter mode of investigation, the consumption would be 69,509,760 cubic feet. At the price given above, the cost would be £31,015, or three and a half times as much as electricity. Of course such an amount of gas could not be burnt, as it would render the place uninhabitable. M. Delahaye did not adduce any precise instance of incandescence lighting, but he gave a detailed estimate of its cost and came to the conclusion that in an important installation it need not be dearer than gas at Paris rates.

The Limed-Coal Gas Process. omy of Railway Working," read at the British Institution of Mechanical Engineers. London Engineering, a modification of the ordinary process of gas-making has been about 2 inch, the corresponding number of about ? inch, the corresponding number of rains. It appears from that the coefficient of trains is 1,100,000 trains. the tables of wear that wear diminishes with the wear-that is, that the the rails wear more slowly for the same The traffic after having been laid for some years. For instance, on the section of way between Melun and Bois-le-roi, in the course of the period 1874 to 1883, the number of trains per millimeter of wear increases from 29,600 to 77,500 trains. The decreasing rate wear here signified is explained, no doubt by the wearing down of the upper part of the rail into a flatter section, and the increasing width of surface subject to wear. lifted by elevators to fixed hoppe s in the It is remarkable that the wear of the oute retort house, and fed by West's apparatus to the retorts, thus saving manual labor. From that of the inner rail to the extent of from rail of each line of way is more rapid than 20 par cent. to 30 per cent. There is a cor responding difference against the outer rail in the percentage of fractures of rails. These differences are ascribed to the less efficient support of the sleepers at the outer sides of the way than in the central portion between the two lines of way. The durability of rails made of Bessemer steel is shown to be much superior to the rails of Martin steel. The hardest rails are found to endure the longest.

The Clayton Air Compressor Works,

drill steel, &c.; also a mining plant to a company in South America. Among the mines which have recently added the Claying figures regarding the wear of steel rails, the following translation of which being laken from the "Foreign Abstracts" of the British Institute of Civil Engineers: "A great number of measurements have been taken and the Copper Queen Mining Company and the Tombstone Mining and Milling ton air compressors to their plants are the Big Bend Tunnel and Mining Company and and the Tombstone Mining and Milling Company, of Arizona. A number of orders for large sizes are booked, and prospects for fall business are reported as excellent.

#### The Use of Steel Scrap in Forgings.

There appears to be no end to the evidence that there are men who have never heard of an open-hearth steel-melting furnace, or of the possibility of doing anything with steel scrap except to pretend to weld it into bars under a hammer. No doubt there must be many railroad men who are always anxious to use such waste or scrap material in their own shops, and it appears to be to them a natural supposition that a class or kind of stock that can be worked or drawn out under a hammer, from the merchant-bar forminto any special required shape, can be or must wear of the rails is at the rate of I mm., or have been originally made in the same way. It continues to be a source of surprise to In inch, per 110,000 trains. The gross tonnage weight of trains passed over the rails has also been recorded, and it appears many foremen that a metal to be steel, even though it has been made by melting, should so stubbornly refuse to become a solid or so studiornly fetuse to become a solid or homogeneous part of some forging or welded bar into which, as a scrap material, it has been put. It would seem certain that the discussion of a few years ago, in the Institute of Mining Engineers, of the difference between "ingot iron" and "weld iron," between "ingot iron" and "weld iron," lengthy though it was, and tiresome as it became to many, has either been too com-pletely forgotten, or that a new generation of leading men has largely succeeded to the control of forges and some other shops who have not heard or read of the details of this discussion. If this discussion showed anything it indicated that the absolute natur se metals is such that it while to try to make them affiliate with each other, as in a scrap forging, so sure is the

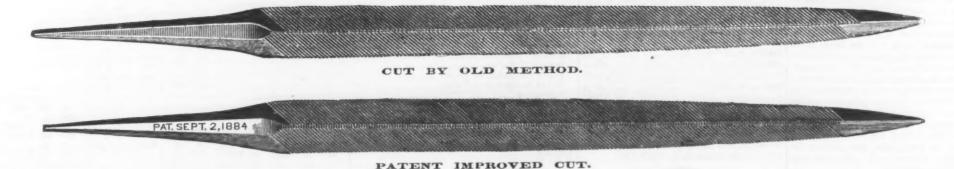
attempt to end in disappointment and defeat.
It is true, no doubt, that steel scrap accumulates in railroad yards, for which either no price at all can be secured, or a price which appears wholly trifling to those in control, and from this there very naturally springs the desire, which too often proves irresistible, to utilize their furnaces, hammers and other fixtures which stand so com-plete and ready for use, and which appear to be exactly the means needed to put into an available form this material which no one can be prevailed upon to buy and take away. It is probable that a good deal of money would be saved if a law could be enacted prohibiting the use of steel scrap, taking the word "steel" in its widest meaning, for any other purpose than the supply of a melting furnace. At all events, it ought to be understood that any such scrap material, which steel-melters do not want, cannot transformed into a condition worthy of a second thought by any means or process which is in the slightest degree inferior in the intensity of the heat applied or in power of assimilation to the best modern steelmelting furnaces.

Bradlee & Co., of Philadelphia, are advised by the secretary of the British Lloyd's Register that the committee of Lloyd's Register have licensed their testing machine and will accept tests made upon that machine for all chains made under British Lloyd's Register

# NEW AMERICAN FILE CO., PAWTUCKET, R. I.

MANUFACTURERS

# FILES AND RASPS.



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even four times, as much work as any Three-Squares they ever used.

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Write for Sample Lot, Price and Terms.

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WESTCOTT & THOMSON, 710 Filbert St., Philadelphia. Pa.

March 31st, 1884.

The Files are the best; the principle is right. When we are in need will send you an order. W. T. BURGESS, Albany, N. Y.

May 6th, 1884. The Files are the best; and the principle is right. The File cuts unusually smooth.

> THE WALES WHEEL COMPANY, Bridgeport, Conn.

July, 1884.

I think the File is the best, and the principle is just what is wanted, and will be a great saving to the consumer. E. A. WALKER, Ansonia, Conn.

June 10th, 1884. I think your Files far ahead of anything in the C. R. BECKER, market in the File line.

Albany, N. Y. July 15th, 1884.

The Flies are the best; principle is right. I find they do equally as well on fine-tooth saws as on W. A. BROWN, Waterbury, Conn. June 29d, 1884.

The Files are the best; principle right. I like your Files. When can I get them?

J. E. SHAW, Bridgeport, Conn.

April 4th, 1884. The Files are the best: the principle is right

They are the best File I have got for a number of years, for I have filed with them, and one corner is as good as a whole File. JAMES S. SIMPSON.

1321 Mount Holly st., Philadelphia.

April 15th, 1884. The Files are the best. Would recommend them in preference to any other, if they are all like that one, which filed nine saws, and five of them were high-tempered saws. HARRISON W. SMITH,

February 27th, 1884.

Files A 1. Good as I want. Shall use them in preference to any others. C. H. ANNABLE, Springfield, Mass.

January 7th, 1884.

The Files are the best. Have filed three saws with one edge of sample. J. S. WHITE,

Pawtucket, R. I. February 8th, 1884.

The Files are the best. Will last longer than any EMERSON BABBITT,

Taunton, Mass

March 4th. 1884. The Files are the best. Would recommend them in preference to any other. I think they are better than the Stubbs files.

LITTLEFIELD STOVE CO., Albany, N. Y.

March 4th, 1884. The Files are the best Think the principle right. Have filed 16 saws with one, so that speaks for DEMPSEY'S BLEACHERY,

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Best ever used. Will do twice to three times the usual work. SLATER COTTON COMPANY,

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Will file two to three times as many saws as or-. dinary files. Files 13 saws with 314-inch File. FALES & JENKS MACHINERY CO.

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The principle is right. Have given your File a

fair trial, and when we have used up our present stock will order some of yours. FREELAND TOOL WORKS,

558 West 34th street, New York.

January 25th, 1884. I find the File the best I ever used. Stop wher.

A. WHITE, you come this way. 98 Washington street, Boston.

February 2d, 1884. The Files are the best. Please send us two dozen 416-inch Taper Saw Files, at earliest convenience. HARVEY SCREW AND BOLT COMPANY,

January 21st, 1884.

The Files are the best; principle right. Have iled 10 saws. W. W. DAVIS, filed 10 saws.

Taunton, Mass. February 16th, 1884.

I have used your File, and have filed more saws than with any other file, and the File is good yet. EUGENE P. BASSETT, Taunton, Mass.

January 29th, 1884. Your Files are good, and I hope to send you an

FREDERICK SHEFFIELD, 1712 Washington street, Boston.

January 16th, 1884.

The Files are as good as can be. I have used files for the last 18 years, and find sample best I M. CUSHMAN, Boston. ever used.

March 1st, 1884.

I have filed more saws with that File than any other. Have shown it to several and all like the principle. JETHRO. C. DAVIS,

March 18th, 1884.

February 27th, 1884.

The Files are the best; principle right; put them in the market soon as you like; are bound to sell. JOHN CRONK, 105 W. 87th st., New York.

The Files are the best; the principle is right They are better than the old style, flling smoother R. F. CORDNAM, Jersey City, N. J.

Bri

Bui Cla Ni

But Su Sta Un

Car Ro Car To

Casi S. C Dev Hai Hai Nor Syr. Tat We

Having found your sample excellent, let your agent call for order when passing. S. BRUTSCKE, 106 W. 87th st., New York. March 8th, 1884.

The Files are the best; the principle is correct.

These Files I shall use hereafter, and can well recommend them to all users of files. WM. H. PLAYFOOT.

11 George st., Bridgeport, Conn. March 6th, 1884.

The Files are the best I ever used, and any one wishing to make inquiry of me to these facts can do so by calling at my shop. F. MAHSTADT, 678 1st av., New York.

January 28th, 1884.

The Files have no equal, and will do twice the work of any other three-square taper. The cheapest file yet made. Valley Falls, R, I.

March 15th, 1884.

Think the sample filed three times as many saws as any other file we ever used. BRIDGEWATER IRON CO.

Bridgewater, Mass.

The Files are the best; the principle is right.
The corners do not break and become netched, like others. T. E. BEACHED, New London, Conn.

See Testimonials in Page Advertisement, Issues of September 18th and 25th.

#### THE Iron Age Directory

AND
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Air Compressors. Pa Clayton Steam Pump Works, Brooklyn Norwalk Iron Works, S. Norwalk
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Alarm Money Drawers. Tucker & Dorsey Mfg. Co., Indianapolis
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Asbestos. The Asbestos Packing Co., Boston, Mass Chalmers-Spence Co., 419 8th, N. Y
Asbestos Paints.
H.W. Johns Mfg. Co., 87 Maiden Lane, N. Y
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Axles, Springs, &c., Manufacturers
Cook R. & Sons, Winsted, Coun
A xes.  Mann W. Jr. & Co., Lewistown, Pa  Peck A. G. & Co., Cohoes, N. Y
Bankers.

Bankers. P. W. Gaullaudet & Co., 2 Wall, N. Y.. Bar Iron. Virginia Nail and Iron Works Co., Lynch-Barb Wire and Fence. Halsh J. & Co., DeKalb, Ill...... Hawk Eye Steel Barb Fence Co., Burli ton. owa Barb Wire Co., 98 Reade, N. Y. horn Wire Hedge Co., Chicago, Ill. Vashburn & Moen Mfg. Co., Worces Bellows, Manufacturers of. Bullock T. H., Cleveland, O....... Flaccus Wm. & Son, Pittsburgh, Pa. Scott Geo. M., Chicago, Ill...... Bells (Sleigh). Bevin Bros. Mfg. Co., Easthampton Chapman Mfg. Co., Meriden, Conn. 

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Allen Will. & Co., 240 Broome, N. I.

Blocks, Tackle, Makers of.

Bagnati & Loud, Boston, Mass.

Cleveland Block Co., Cleveland, O.

Detroit Block Works, Detroit, Mich.

Lovejoy J. F., 102 Chambers. N. Y.

McCoy & Sanders, 28 Warren, N. Y.

McMillan Will., 113 South, N. Y.

Pennield Block Co., Lockport, N. Y. Blowers, Forge and Pressure. Boiler Cleaners.

Beiler, Compound. Crescent Mfg. Co., Cleveland, O.. Boiler Feeders. The Miller Co., Canton, O.

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Boring Implements.
Amidon & White, Buffalo, N. Y......
Ives W. A. & Co., New Haven, Conn. Boxes for Hardware, Green S. H., 12 Murray, N. Y.

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Ansonia Brass & Copper Co., 19 Cliff, . Y me Iron Works, Rome, N. Y.... ville Mfg. Co., 421 Broome, N. Y. terbury Brass Co., 296 B'way, N.

Brass Butt Hinges. Tlebout W. & J., 16 & 18 Chambers, N Brass Goods. Waterbury Mfg. Co., Waterbury, Conn... 2 Bridge Builders.
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Brushes.
Bronwell Brush & Wire Goods Co., Cincinnati, O. Buckets, Pump and Elevator. Iron Clad Mfg. Co., 22 Cliff. N. Y... Butcher and Shoe Knives. Manufac n, Sheffield, England.....

He

Butts and Hinges. Smith & Egge Mg. Co., Bridgeport.. Stanley Works, New Britain, Conn.. Union Mg. Co., 96 Chambers, N. Y.. Can Openers.
Andress Thos. J., Philadelphia, Pa.. Car Axies. Roberts A. & P. & Co., 265 S. 4th, Phila... Carriage Bolts. Makers of. Townsend, Wilson & Hubbard, Phila.

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Hammer & Co., Branford, Conn.

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Bargains in New and Second-hand Machinery.

Bargains in New and Second-hand Machinety.

One Corliss Beam Condensing Engine, 30 in. x 72 in. One Horizontal Corliss Engine, 14 in. x 30 in. New, One Horizontal Corliss Engine, 14 in. x 30 in. New, One Horizontal Engine, 12 in. x 30 in. New, One Horizontal Engine, 12 in. x 16 in. New. One Horizontal Engine, 12 in. x 16 in. New. One Horizontal Engine, 13 in. x 24 in. New. One Horizontal Engine, 13 in. x 24 in. One Horizontal Engine, 15 in. x 24 in. One Horizontal Engine, 16 in. x 26 in. One One 1, N. Y. Safety Co.'s Upr. Engine and Boiler One 7-Horse Upright Engine & Boiler combined. New One 1, H. P. Oscillating Engine and Boiler. One Horizontal Engine, 5 in. x 12 in. Ames. One 1, H. P. Oscillating Engine and Boiler. One Horizontal Engine, 5 in. x 27 ft. One Horizontal Engine, 5 in. x 14 ft. One Engine Lathe, 24 in. x 12 ft. New. One Engine Lathe, 27 in. x 5 ft. One Engine Lathe, 18 in. x 8 ft. One Engine Lathe, 18 in. x 8 ft. One Engine Lathe, 19 in. x 6 ft. One Engine Lath

J. Gray's Machinery Depot, 37 Dey St., N. Y.

#### A Rare Chance for Foundrymen and Machinists.

The G. A. Kelly Manufacturing Co., 3½ miles west of Jefferson, Texas, on the M. & P. R.R., will be sold at a bargain, as the present owners (bankers and merchants) are inexperienced in this line of business, and have not the time to devote to oversting same

without exception, it has the finest machinery for putting up Wagons, Plows, &c., by Steam in the South, and by an addition of patents any and all articles made of iron can be successfully made. A Furnace situated a mile from works, making Car Wheel and Foundry Iron second to none.

making Car wheet and rothary its second on one.

Plows of this Company's make have a wide and established reputation, with a good trade in Arkansas, Louisiana and Texas.

There is belonging to Works too Acres of Land, with sufficient Houses for accommodation of employees. Situation healthy, with abundance of pure water.

Works unen-numbered.

Timber plentiful adjacent Works,
For further information, address

R. BALLAUF & CO., General Managers,

Jefferson, Texas.

#### For Sale.

Vertical Tubular Bollers, complete and rendy for delivery. All made of the best C. H. No. 1, 50,000 lbs. Flange Iron, double riveted and hand-innde.
One 65 H. P., 6ft. olim., 9 ft. 2 ib. high, submerged heads 36 in. Iron. Good for 115 lbs of steam.
Two 49 H. P., 46 in. diam., 9 ft. high, complete. 36 in. sh-b. 36 ib. Reads.
One 21 H. P., 46 in. diam., 9 ft. high, 80 2-in. tubes.
One 20 4. P., 40 in. diam., 9 ft. high, 80 2-in. tubes.
One 20 4. P., 40 in. diam., 7 ft. 2 in. high, with 86 2-in. tubes; also several smaller Boilers.
Also one sec-ind-has-d 70 H.-P. Horizontal Tubular Boilers, in. diam., 16 feet iong, with 68 3-in. tubes. Good for 80 ibs of steam. With full front and all castings complete.
Une 20 H.-P. Ver-leal Tubular Boiler, 5 ft. diam., 7 ft. high. Used 6 montas; good as new, and all complete. I have also a large lot of Tools, such as Lathes, Planers. Illing Machines, and Engines from 4 H.-P. to 62 H.-P. All new. JOSEPH LUM. EY.

#### For Sale.

A 80-INCH SQUARING SHEAR,

Niagara Stamping Co.'s make; used but a few days. Guaranteed better than new.

NIAGARA STAMPING AND TOOL CO., 147 and 149 Elm St., Buffalo, N. Y.

#### For Sale.

One 50-foot Air Hoist for Blast Furnace, air cylinder 30 inches internal diameter, with necessary sheaves. Will hoist two barrows of stock

POTTSVILLE IRON AND STEEL CO., Pottsville, Pa.

### For Sale.

Mining and other purposes a specialty.

WARREN SPRINGER, 195 to 219 South Canal St., Chicago.

#### For Sale.

Becond-hand

DROPS and LIFTERS. BEECHER & PECK, Lock Box 293, New Haven, Conn.

## E. BISSELL & CO.,

Wholesale Hardware Auctioneers

83 Chambers and 65 Reads Sts., N. Y. Sales held weekly for the trade. Consignments solicited. We refer to the leading manufacturers and importers.

#### Wanted-Partner,

either active or special, with \$25,000 to \$40,000, to in the West. A good opportunity for party desir-

Address " X,"

Wanted—A position as Chemist by a graduate of the School of Mines, Columbia College. Will engage in any sort of chemical or metallurgical work. Address

8. M. C. Coll.
220 South 5th St., Reading, Pa.

## Trade Report.

#### British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

follows: 

Langloan, Gartsherrie, Summerlee, Carnbroe, Lighterage from Ardrossan to Glasgow is 1/ ?

Cleveland Pig.-The market is unchanged. We quote as follows, f.o.b. shipping ports: 

mixed lots, Nos. 1, 2 and 3, equal portions, f.o.b. shipping ports.

Manufactured Iron.—The market is firmer. We quote nominally at works:

		£					9.	
Staff. Ord	l. Marked Bars	7	10	0	@			
4.6	Medium "	6	0	0	@	6	10	0
14	Common "	5	10	0	@	5	15	0
Hoops, 20	W. G. and over.				-			
" Co	mmon Best	6	15	0	@			
11 Mi	edium	6	5	0	00	6	10	0
16 Co	mmon	6	0	0	a	6	7	6
Sheets, 20	W. G. and under.							
	dinary Best	7	15	0	0	8	5	0
	mmon							
Welsh Bar	8	4	17	6	@	5	2	6
Stool	Dalla Assessed			3	0			

Steel Rails-Are unchanged. Ordinary sections are quoted at £4. 15/ @ £4. 17/6, f.o.b. shipping ports.

Old Rails-Are unchanged. We quote Old D. H.s £2. 17/6 @ £3, c.i.f. New York. Scrap.—The market is unchanged. Heavy Wrought is quoted £2. 10/ @ £2. 12/6, c.i.f. New York.

Copper-Is without change. We quote Best Selected, £59 @ £60, and Chili Bars, £54 @ £54. 10/.

Tin .- Market weaker. We quote Straits Ingots, spot, £77 @ £77. 10/, and futures, 77

Tin Plates .- Are not so steady. We quote: Tin Plates, 10x14, 1st qual. Charcoal....19/6 @ 21/6

" 2d " ... 18/6@19/
" 1st " Coke ... ... 17/6@18/
" 2d " ... ... 15/@15/6 Spelter.—The market is a little steadier.

We quote Ordinary, at shipping ports, £14. 10/ @ £14. 12/6.

Lead .- The market is quiet. We quote Common English Pig, £10. 15/@ £11.

Freights.-Steam from Glasgow to New York, 2/6 @ 3/; Liverpool to New York, 5/; Liverpool to Philadelphia, 5/ @ 6/6, and London to New York, 7/6 @ 9/6.

#### Financial.

Office of The Iron Age, WEDNESDAY EVENING, October 8, 1884.

Although we notice a larger number of packages of merchandise in course of delivtial signs of a reviving trade either in New leading clearing houses in the United States 2,500,000 bushels in the visible supply compared with the previous week, and foreign orders are limited. Corn is strong on account of light receipts, and only a moderate new corn was received on Monday in St. Louis from Kansas. Ocean tonnage available for grain is scarce for the moment. Drygo ds jobbers report the amount of new business unsatisfactory. Cotton is in steady \$275,122,131 for the same time in 188; demand. The exports last week were 70,-246 bales, against 67,878 for the corresponding week in 1883, and the receipts are fast increasing.

Rates for sterling exchange were advanced to \$4.83 @ \$4.85 in expectation of an \$289,210, making a total of \$48,715,092 since immediate advance of the rate of discount January 1. by the Bank of England to 21/2 %. The amount of \$650,000 in gold was shipped from London on Saturday for New York. pointing a committee to consider and report

\$150,000 a day.

the latter was stronger, as the result of the preferred to the amount of \$800,000, leaving that the market is not so steady. company's circular offering stockholders general creditors without a dollar." the opportunity to subscribe for portions of \$5,000,000 new stock at 26, and \$5,-Lackawanna, 1071/8; Erie, 143/8; Kansas [Special Cable Dispatch to The Iron Age.]

London, Wednesday, October 8, 1884.

Scotch Pig.—The market is unchanged.
We continue to quote makers' brands as follows:

Coltness alongside Glasgow.

Sept. 1884.

And Texas, 18; Lake Shore, 77%; Missouri Pacific, 95½; New York and New England, 10¾; Jersey Central, 47½; Northwest, 91%; Northern Pacific, 19½; Oregon and Transcontinental, 13¾; St. Paul, 79¾; Ownhe, 23½; St. Paul, 79¾; Omaha, 321/4; St. Paul and Manitoba, 891/2 Union Pacific, 541/2; Western Union, 641/4 1.50/6 Canadian Pacific, 46; New York Central, 50/6 95½; Ohio and Mississippi, 20¼; Ohio Central, 2½; Pacific Mail, 53½; Texas and like posied in 1884, as against those of a like posied in 1882, is 2005, a gain of over .50/6 tral, 2½; .44/6 Pacific, 11¾

United States bonds closed as follows: 5. 3 per cents 5. 4/8s, 1801, coupon... 5. 4s, 1907, coupon... 5. Currency 6s, 1895... 5. Currency 6s, 1896... 6. Currency 6s, 1896... 7. Currency 6s, 1898... 8. Currency 6s, 1898...

The weekly bank statement shows an increase of \$1,691,950 in surplus reserve, other claims falling due. The banks now have a surplus of \$29,897,675, against \$2,-089,150 at the same time last year, and \$471,825 the corresponding date in 1881. The loans are reduced \$621,500, and the total leans compared with one year ago show a curtailment equal to about \$35,500,-000. Rates for money are unchanged, with discounts firm at 51/2 @ 6%, and four months' acceptances, 6 @ 7 %. The demand for money West and South is moderate. Of Western credits the Chicago Tribune says: There is no general distrust as to the

solvency of farmers and country merchants, but it is thought advisable to wait till the bankruptcy lists of the last part of the year are out before going in very deep."

Consistent with the fact that \$30,000,000 lies idle in Wall street, trade movements continue sluggish and disappointing. Similar accounts come from remote points, the dullness prevailing in regions west of the Missouri River differing only in degree from conditions in the extreme East. In our local markets complaint is made of an unseasonably high temperature and some delay in country collections. Jobbers and manufacturers alike are disinclined to accumulate stock in advance of consumers' demands. Our leading cities, St. Louis notably excepted, report no animation. In Boston the improvement is not perceptible, and manufacturers of textiles "see no other way their machinery and wait till the tide takes a favorable turn." In Philadelphia trading quirements for some time to come. In Baltimore business is described as being spasmodic, some fairly active days succeeding others of extreme quiet, and the volume not up to the average former seasons at a like period. In Minneapolis a large trade is expected to follow the present active movement of produce, and in San Francisco jobbers notice some increase in orders from the interior. In Montreal the outlook is devoid of that promise which the abundant crop prospects gave rise to in the early part of the season.

ery by our jobbing houses, and a renewal of the blockade of draymen near our local this port during the past week were somefreight depots, there are as yet no substan- what increased, the total being \$8,233,212, of which \$5,908.980 represents general mer-York or elsewhere. Occasional rallies are chandise and the remainder dry goods. The the Straits Settlements than ever, while soon followed by a relapse. The report from receipts of tea were heavy, but otherwise Chinese trade flags. Some people call Tin most of the leading articles are coming only cheap at present rates, but it should not be shows a total decrease of 23.7 % in the to a moderate extent. The total imports of forgotten that it was £20 cheaper ? ton only volume of trade for the last week, compared dry goods for the nine months ended with some six years since. When all raw material with one year ago, and the losses, as a rule, September were \$94,683,791, or about \$3.- declines as it has done this year, because are evenly distributed. In New York the 000,000 less than for the corresponding there is too much of it, it is difficult to say The largest stock of New and Second-hand Engines, Boliers, and general Machinery in the West. Send for Catalogue Hoisting Outfits for Cos is fairly active, with a tendency to easy prices. Official exhibits show an increase of about period of 1883. The exports of domestic produce from this port during the past week exhibit an increase compared with the previous week. The total is \$7,110,556, against \$275,122,131 for the same week last year. movement is expected. The first carload of Both cotton and provisions have been No. 13 Cedar street, New York, furnishes moving out more briskly, while the shipments of breadstuffs and petroleum were fairly well sustained. Since January the total is \$248,032,376, compared wit According to the Custom House reports th imports of specie at this port for the weel were \$863,392, including \$60,000 in silver as against \$674,690 for the same time la year, and the exports of specie amounted t

> The New York Chamber of Commerce a their recent meeting adopted a resolution ap A further drain of English gold is caused by the draft of a bill for presentation to the nex the expedition up the Nile, at the rate of Legislature, which shall prohibit all prefer ences in cases of bankruptcy, and place a The Stock Exchange market has been creditors on a uniform footing in the distri

concerning Louisville and Nashville. To-day since an assignments was made, with debt 16/ @ 18/6. From London we are told

the past quarter, when incorporated with Domestic, but excessively dull, the consump-000,000 new adjustment bonds at 66. Quotations as follows: Central Pacific, 41½; last, present a formidable list. The gain in roding Lead is nominally worth \$3.80. Soft numbers of individual commercial deaths, Spanish has been steady at £10, 15/ in the as compared with nine months in preceding London market. Manufactures are quoted years, is more than equaled by the increased as follows: Lead Pipe, 5 1/6 Ptb: Sheet indebtedness. Thus, the total number of Lead, 64¢; Tin-lined Lead Pipe, 15¢, and failures from January 1 to September 30, Block-Tin Pipe, 40¢, allowing in trade for Old turn showed a gain of 38 % over that of cabled that the market is without change. like period in 1882, is 2995, a gain of over The gross liabilities for nine months, amounting in round numbers to \$196,000,000, shows an increase of \$73,000,-120% ooo in total liabilities over those in nine months of 1883, or 60 %. Thus, with a 13 % increase in the number of failures this year we have 60 % increase in the total indebtedness thereof. The increase in liabilities in nine months of 1883, as compared with 1882, Bessemer Pig.—The market is irregular.

thus reflecting the heavy Treasury disburseabout 73 %, at a time when the number of
failures gained 38 %. The liabilities of 1884, as compared with those of 1882 (nine months), have gained \$125,000,000, nearly 15 times the total liabilities in nine months of 1882. The actual assets for nine months of the current year, amounting to \$108,500, ooo, are \$45,000,000 larger than the total in nine months of 1883, or nearly 75 %, and almost three times as large as those in a like portion of 1882.

The truce between the Pennsylvania and Baltimore and Ohio Railroad companies was broken by the summary closing of the pas-senger contract between them, and it is thought that the freight contract is also

The stock of gold in the United States Treasury is said to have increased to \$130,000,000, notwithstanding the recent bond calls, and there is no prospect of a material reduction before January.

The annual report of the New York Clearing House shows some enormous figures, viz.: The total transactions of the Associated Banks for the year ending September 30 were \$35,616,968,331.71, consisting of exchanges of \$34.092,037,337.78, and balances of \$1,524.930.933.93. The average daily of \$1,524,930,933.93. The average daily transactions of the Clearing House for the year were \$116,016,183,48, being exchanges \$111,048,981.55, and balances \$4,967,291.93.

#### Metal Market.

Copper .- Sales for the week have not exceeded 100,000 fb Lake Superior at 13# @ 131/4¢, while other brands continue bringing manufacturers of textiles "see no other way out of the present depression than to stop Calumet and Hecla Mining Company's office in this city, that the fire at their mines has done but trifling damage and will not curtain is likely to be within the limits of actual rethe output in the least. The London market has been steady the last day or two, Chili Bars at £54, and Best Selected at £59. Manufactures may be nominally quoted as under: Bottoms, 20¢; Braziers, 20¢; Sheathing, 18¢, and Bolt Copper, 20¢. We receive to-day the foll wing from London: "No change to note in this market. Best Selected £59 @ £60, and Chili Bars £54 @ £54. 10/.

Tin .- The break in the London market has been so sudden and unexpected that ours has been fairly stunned, and is now irregular and demoralized at 173% @ 171/20. Straits. Yesterday London came £77 5/; The receipts of foreign merchandise at this morning, first, £76. 15/, and subsection port during the past week were some-quently £76. 10/, while Singapore wired £78, cost and freight per steamer to New York. Supplies seem to be more ample in here and in London, leaving staple merchandise to be regulated in value by the legitimate operations of demand and supply solely, which is all the better for the consumer. After a while steadiness may thus be reached Mr. Charles Nordhaus, East India agent, us the valuable statistical items below: AMERICAN TIN STATISTICS.

AMERICAN TIN STATE	
Sept. 1, Stock in United States, e. 30, Arrivals per steamers	Tons. stimated 1,500 800
Total  # 30, Consumption for Sept mated	ember, esti-
Oct. 1, Stock in first and second mated	hands, esti- 1,400
Afloat from the Str.	ails.
Cleared.	Tons.
July 1 to 31, Steamers for New 1	
Aug. 1 to 31, Steamers for New Y October-November	250
Sept. 1 to 30, Steamers for New Y November-December	fork due er 250-200
Total	2,200
Afloat from Europe	150
	0.400
Oct. 1, Visible supply for America Against visible supply, 1883	3,745 3,745 3,050

dull and featureless, with prices barely sustained. At the close it was announced that tion Mr. Bliss spoke of the glaring abuses of We receive at the close the ensuing cable-Office of The Iron Age, \$3 Reade St., New York.

CHEMIST.

Wanted—A position as Chemist by a graduate of the School of Mines, Columbia College, Will

Lained. At the close it was announced that the Burlington and Union Pacific have agreed to settle their differences, and that the Transcontinental pool will be adjusted to the Transcontinental p 21st inst. On Saturday the market was man who had been honored in New York for the close, large lines, ordinary brands, bank statement and reported shipments of parties now in that room that his firm had a box: Charcoal Bright, \$5.50; do. Ternes, FIRM of Engilah merchants and manufacturers gold from the other side. On Monday there are require, January 1, 1883, an agent in New York, to obtain orders for Engilah Saddlery, Sheep Shears Chains, General Bardware, &c. Payment by commission. Security and references required. Apply BOX 27 Fost Office, Walsall England.

bank statement and reported shipments of gold from the other side. On Monday there good surplus of at least \$4,00,000, and that this firm had a gold from the other side. On Monday there good surplus of at least \$4,00,000, and that do. Ternes, \$4.75; Coke Tin, \$4.70 @ \$4.85, and do. Ternes, \$4.37½ @ \$1.50. Liver-thus, giving the most absolute assurance of the solvency of the concern; yet a few weeks

They quote Coke 15/ @ 15/3 and Charcoal Kentucky Bale Rope.

Waste Paper and Scraps.

Westerweeks Wester Paper and Scraps.

They quote Coke 15/ @ 15/3 and Charcoal Kentucky Bale Rope.

Lead.-The market has been nominally The failures reported to Bradstreet's within sustained at \$3.75 @ \$3.80 for Common 1884. inclusive, was 8302, as compared with Lead delivered in New York 3¢ 2 fb. Shot: 7358 in a like portion of 1883, a gain of 944, Drop, 6¢; Buck. 7¢; Chilled. 7¢. Shot in 5-lb or nearly 13 %, and the record for 1883 in bags, 1¢ ? It extra. From London we are

Spelter and Zinc.-The combination formed some time ago among Western smelters appears to have been broken, and Common Domestic Spelter has sold to a limited extent at \$4.45, since Silesian may be quoted at \$4.90 @ \$5. London quoted Silesian at £14.10/ this morning. Bertha Refined is worth 8¢. Sheet Zine is seasonably active at 5 1/4 ¢. Domestic. From London we are cabled this afternoon that there is no change in the market.

Antimony.-Our market has lacked buoyancy and activity, and Hallett has to be quoted at 10%; Cookson, 10 % . London cables Hallett as heretofore, £41.

#### Metal Exchange.

The only sale made on the floor of the Exchange since our last report was one of 10 tons of Tin, for October delivery, at 171/2¢.

The Board of Directors have decided to amend the rules so as to increase the fee for transferring memberships to \$10; to change the time of the annual meeting from the first Wednesday in April to the third Wednesday in March, and to change the time of the election from the first Wednesday to the first Monday before the first Thursday in April, so as to place an interval of at least one week between the annual meeting and election, and three days between the election and first meeting of the new board for organization. A ballot will be taken on the adoption of these amendments on the 17th inst., between II a. m. and I p. m.

The following statistics of imports and stocks of Iron, Steel and Metals at the port of New York are taken from the Metal Exchange Daily Report:

	Imports.		
		Sept., 1884.	Sept.,
	Iron and Steel.	Tons.	Tons.
	Pig iron		10,441
b	Spiegeleisen		7,890
}	Scrap iron	801	3,622
	Scrap iron	753	699
	Steel blooms	509	18
,	Steel rails	1,487	3,019
	Steel wire rods		8,041
2	Iron wire rods	190	872
ģ	Swedish iron	4,468	1,873
ĺ	Iron beams		88 60
	Hoop iron		348
į	Sheet iron		430
İ.	Russia sheet iron		135
	Steel, bdls., bars, &c	330	547
	Steel tires and forgings		485
3	Iron tubes	7	****
		which duffers	
,	Total	26,979	88,518
7		Sept.,	Sept
)	Miscellaneous.	1884.	1883.
	Iron ore, tons	3,400	2,355
	Tin plates, boxes	165,111	198,450
	Slab and ingot tin, tons	797 700	1,064 2,650
	Copper (old) D	100	1,231
	Pig lead, tons	112	168
	Spelter, tons,	156	59
	Pig lead, tons. Spelter, tons. Sheet zinc, tons.	107	17
	Scrap, tons	****	10
	Reg. antimony, casks	448	155
	Nickel alloy, D	14,800	14,092
١	Stocks.		
		Oct. 1. 1884.	Oct. 1. 1888.
١	Iron and Steel.	Tons.	Tons.
ı	Pig iron	8,775	1,740
	Spiegeleisen	455	684
	Old rails	1.835	1,185
	Scrap iron	1,340	828
1	Scrap steel	306	806
١	steef rails	198	121
1	New iron rails	42	m
	Steel wire rods	2,510	5,722
Į	Iron wire rods	500 1,518	689
1	Sheet iron	49	3,903
ı	Russia sheet iron	43	20
1	Steel, bdls., bars, &c	80	
1	Decel Carrie San Control		
1	Total	12,084	14,946
ł		Oct. 1,	Oct. 1,
J	Miscellaneous.	1884.	1853.
J	Tin plates, boxes	17,718	88,047
J	Copper (old), D	6,108	6,163
1	Brass (old), tons	18	895,568
I	Spotter tons	327	154
1	Sheet zinc. 10	28,073	28,058
1	Spetter, tons	18,400	13,440
1	NA CONTRACTOR OF THE PARTY OF T	89	118
	Reg. antimony, casks	0.8	110
ł	Reg. antimony, casks Nickel alloy, 20	4,970	10,200

#### Old Metals, Rags, &c.

The purchasing prices offered by dealers are as follows:

	Mark Mark			
ı	11/2/11/5	.07	68	4
1	Copper Bottoms	.07	0	****
ı	Yellow Metal	.06	(0)	****
Į	Brass, heavy	.06	0	
ı	" light	.05	a.	
Į	Composition, heavy "	.08	6	*****
ı		.00334	6	
ı	Lead, heavy	9150		****
ł	Tea Lead	.0216		.08%
1	Zine		0	
	Pewter, No. 1	.19	0	* *
	NO. W	.08	0	****
	Wrought Iron If ton,	18.00	0	****
	Light	10.00	0	****
	Stove Plate Iron "	10.00	0	10.50
	Machinery "	13.00	60	
	Grate Bars "	4.00	a.	*****
	Stereotype Plates	.04	0	
	Electrotype "	.0814	60	
	Small Type	.05	6	.0514
	The prices current (prices	paid	by	local
	dealers) for Rags, &c., are as		8 2	
		30 th S		00 4 4

	44	60						0.6	mt 7	250	
	1.0	Cott	on		 				775%	COS	
	60	1	No. 1	1					210	60	31
	White ?	lo. 1						0.0	4	60	41
	46 B	io. 2						00	8	60	23
	Seconds							0.0	36	0	1
	Soft Wo	olens.						0.0	4	ap.	43
	Mixed R	BEE.						6.6	136		
	Gunny B	laggin	g					4.6	154		
	Jute But								156		
	Kentuck	y Bag	ging	ç				6.6	213		
	Book Ste							4.6	135	62	13
ŀ	Newspay	pers.						0.0	1	68	

## Trade Report.

#### Philadelphia.

Office of The Iron Age, 220 South Fourth St., Philadelphia, October 7, 1884.

Pig Iron.-The market has been in a very lifeless condition since date of our last report, and the hoped-for improvement seems as distant as ever. Small lots are about all that can be placed, and even these are expected to be at lower figures. Holders of Foundry Irons are pretty steady, however, and, as good brands are in limited supply, buyers have no alternative but to pay the prices asked, although, as already stated, only very small lots are taken. Mill Irons are not as firm as other grades, and consumers claim that special rates can be had on lots of 500 tons and upward. This may be so in some cases, but the majority of best-known brands are held with absolute firmness, according to quality, and values fixed by the makers. There are considerable quantities of outside brands, however, some of excellent quality, some of fair quality and some uncertain. It is on this class of Iron that there is so much discrepancy in price, and when \$16 @ \$16.50, deliv ered, is named for Mill Irons, or \$18.50@ \$19 for No. 1 Foundry, it does not apply to standard brands, but to what are known as outside lots." At the same time there is no doubt that they have a depressing tendency on the entire market, and it is this class of competition that has caused the demoralized feeling which so generally prevails. Judging from the limited demand, consumption must be unusually light, and, although production has been cut down considerably, it appears to be sufficient for all requirements. At the moment there is nothing in sight likely to change the monotonous current of events, and about all that sellers seem to hope for is to be able to place their product without further sacrifice in price. Very few are carrying stocks of any account, and in the majority of cases a fair amount of orders are entered for forward delivery, so that sales need not be large to keep clear of the balance of their product. General quotations are same as last week, say \$19.50 @ \$20 for No. 1 Foundry, \$18 @ \$18.50 for No. 2, and \$17 @ \$17 50 for Gray Forge, with higher prices for special qualities, and lower prices in cases such as already men-

Foreign Iron.-Nothing doing, and prices altogether nominal. Bessemer at \$19 @ \$19.50; 30 % Spiegel at \$32, 20 % at \$26.50, and 10 @ 12 % at \$23.

Blooms.-The market very dull, and only limited transactions are reported at last week's prices, say : Charcoal Blooms at \$52 @ \$53; Run-out Anthracite, \$43; Scrap Blooms, \$40; Northern Ore Blooms, \$38.

Muck Bars .- Market very quiet, and prices barely steady. Good qualities command about \$29 @ \$29.50 at mill, but lower prices have been accepted on large lots.

Bar Iron,-There is little to be said except that business is as dull and depressed as ever. There is absolutely no demand for large lots, so that the mills are running on small orders as received from time to time-There is great anxiety among manufacturers to secure a larger share of business, but, as they are all pretty much in the same condition, it is not easy to do it without sacrificing prices. There is no margin for that, however, so that there is practically no change in the position whatever. Best Refined Bars are quoted at from 1.85¢ to 1.9¢, and Medium and Common at from 1.6¢ to 1.75¢, with special rates on large orders.

Plate and Tank Iron.-Business has been very quiet during the week, and the mills are getting through their orders with. out any immediate prospect of having them there will be a decided improvement if Ohio be carried by the Republicans, as a large amount of work is held in abeyance until that point is decided. The improvements and extensions referred to will have to be carried out in any event, but the idea is that prices may be lower under Democratic administration; hence the delay. Prices may be quoted same as last week, viz. Plate Iron, 2.1¢; Tank, 2.15¢ @ 2.25¢; Shell, 2.75¢; Flange, 3.75¢; Fire-Box, 4.25¢; Steel Plates, Flange, 3.5¢; Fire-Box,

Structural Iron.-The demand has been very disappointing during the week, and while some of the leading mills are fairly supplied with orders, others are running very short. Sales during the week have not been equal to deliveries, so that the position is less favorable than it was a week ago. There is a large amount of work in sight, nevertheless, but there is no certainty when it will be given out, so that for the time being the feeling is anything but cheerful. Meanwhile prices remain as last quoted. viz.: 2.1¢ for Angles, 2.25¢ for Bridge Plate, 2.75¢ for T's and 3.5¢ for Beams and Channels, subject to the usual discount on large

Sheet Iron.-The demand has been very unsatisfactory during the week, but at the present figures there is no room for lower prices. The best qualities are therefore steadily held at former quotations, which for small lots are about as follows:

Best Refined, Nos. 26, 27 and 28. Best Refined, Nos. 18 to 25. Common, 14¢ less than the above.

Best	Bloom	Sheets.	Nos.	26	to	28	١									 	634	d
Best	Bloom	Sheets,	Nos.	22	to	25			0					0		 	6	
Best	Bloom	Sheets,	Nos.	16	to	21						0	a	0		 	534	ď
Com	mon Re	ed Plate	s, 3-1	6 to	0 1	6		٠	0.4					0			21/	0
Blue	Annea	led							۰		٠	0 1	0 0				. 2.6	kė
Best	Bloom	. Galvar	nized	, di	isc	ou	ni	t.			,	0		0			. 50	%
Seco	nd qua	lity, disc	count														5216	8
Com	mon, d	liscount					0 1			0 0			9	0	0		573%	9

Wrought-Iron Pipe .- There is a fair demand from those who have building contracts and steam-heating contracts to fill before cold weather sets in, but there is no dis position to buy more than is needed at once. Buyers, in a measure, fix prices to suit themselves, and scarcely two orders are taken at the same figure. We quote discounts nominally as before, viz. : Butt-Welded Black Pipe, 45 %; Butt-Welded Galvanized, 35 %; Lap-Welded Black, 60 %; Galvanized, 45 % Boiler Tubes, 57 1/2 %.

Steel Rails.-The market has shown a steadily hardening tendency, and prices have averaged pretty nearly \$1 % ton more than during the week previous. One reason for the advance is that the mills have taken nearly all the orders they can handle during the winter months; and another, that Rails have cost more than was obtained for them during the past two or three months. Manufacturers are therefore quite indifferent about selling unless they can realize better figures—say \$29 @ \$30 at mill, although there is reason to believe that sales recently made were at from \$28 to \$28.50. Prices are firmer, however, and in ordinary cases \$20 would probably be an inside figure, and a trifle more on small lots.

Steel Blooms .- Prices vary according to quality required. There is considerable inquiry for sample lots, for which quotations are about as follows: Nail Blooms (Foreign), \$35 at tide; Soft Basic Blooms, for special uses, \$38 @ \$40. Domestic Slabs, \$36.50 @ \$37.50, delivered.

Old Rails .- There is but little change to report, and very few sales have been made of late. Extra good qualities might bring \$18.50 @ \$19, spot, but buyers are not disposed to pay within \$1 79 ton of these figures for such lots as are immediately available. A lot for shipment from a South ern port was sold at equal to \$18, Philadelphia, and several lots at interior points brought \$18.50 @ \$19.

Scrap Iron.-The demand is very limited and prices somewhat irregular, as follows: Selected No. 1, \$19.50 @ \$20, f.o b. cars; cargo lots, \$17.50 @ \$18. Machinery Scrap and Wrought Turnings held at \$15 @ \$15.50, and Cast Turnings at \$9 @ \$10.

Naits.-The demand keeps up fairly, but there is no firmness to prices. Steel Nails continue to influence the market, and are selling at a trifle more than Iron, and in some cases at the same price; \$2.10 @ \$2.20 is generally obtained, with possibly a few cents less in exceptional cases.

#### Pittsburgh.

Office of The Iron Age, 77 Fourth Avenue,

There has been considerable excitement the past week in politics, Grand Army and labor circles, but general business does not improve; on the contrary, trade in general is in a most unsatisfactory and unsettled condition, and the prospect for an improvement is by no means encouraging. A couple of prominent Iron firms-Oliver Bros. Phillips and Dilworth, Porter & Co.asked their common laborers to accept a reduction in wages of from 10 to 121/2 %. This, as might be expected, created a feeling of great dissatisfaction in labor circles, where it was regarded as an act of oppression. The Amalgamated Association protects the skilled workmen, but takes no cognizance of the laboring men, who are not organized and are unable, therefore, to resist the demands of their employin an exceedingly depressed and unsettled condition, but it seems hard that the pittance paid the laboring men has to be reduced. They are now receiving from \$1.12 1/2 to \$1.25 per day, so that it can be readily seen how hard this reduction would bear upon them. The firms in question say that it is a matter of necessity; that in order to successfully meet competition they must make a reduction in the cost of production and the laboring man is the only one they can reach. The men held a meeting and refused to accept the reduction, and both mills have been closed, throwing some 3000 men out of employment. This is to be regretted, but it is thought that the shutdown will be of short duration.

Iron Ore .- The situation here remains unchanged; consumption continues exceedingly light, and is more likely to be reduced than increased, as the few furnaces hereabout in blast threaten to shut down as soon as they get through with existing contracts unless there is an improvement in the meantime, of which there is but little prospect at present. It is pretty evident that there will that it is difficult to give reliable quotations not be much change for the better during the remainder of the present year, as many of the idle furnaces will refuse to buy until they are about ready to blow in. In the meantime stocks of Ore at the lake ports are | \$17, gross. large and increasing.

Pig Iron -Business continues light, but all that can be expected in view of the depressed condition of the general Iron trade. 75 % on Double in car lots and upward. Furnacemen, as might be expected, are are that the number of idle furnaces will be ton on cars at ovens.

increased between now and the close of the year. This prediction is based upon the principle that it is better to do nothing than to work for nothing. There has been little or no change in prices for several weeks; of course there are off lots that can be obtained at almost any price, but well-known brands of both Mill and Foundry are beld with considerable tenacity, and consumers generally prefer to pay the difference for the latter, on the principle that a good article is always the cheapest in the end. It is worthy of mention, by way of encouragement to the selling interest, that, in addition to a steady falling off in production, stocks are light, both in first and second hands: consumers, as a rule, have little or no stock, as they have been buying along as their immediate actual necessities required for several months past. We re-

peat former quotations:			
Neutral Mill	\$16.00 @	\$16.50,	mos
All-Ore Mill	12.50 @	18a00.	4
White and Mottled	15.00 @	15.50,	
Silvery Iron	17.50 @	18.50, 4	44
No. 1 Foundry	19.00 @		1 11
No. 2 Foundry			4 60
Cold-Blast, Charcoal		27.00, 4	1 44
Bessemer Iron		19.00, 4	£ 44

Included in the sales of Mill Iron the past week was a lot of 1000 tons made from native Ore, at \$16, four months, and a couple of small sales of Bessemer—one at \$18.75, four nonths, and the other at \$18 75, cash.

Muck Bar.—The dullness noted for some time past continues, and in the absence of sales we repeat former quotations -\$28 @ \$29, cash.

Manufactured Iron.-Mill owners almost without exception continue to report trade as being very dull; that, in addition to a very light demand, prices are so low that it is about all the manufacturer can do to get actual cost for his products. Prices are still quoted here on a basis of 1.65¢ @ 1.75¢ for Bars, 60 days, 2 % off for cash, but reports come from Chicago, St. Louis and other points of distribution West that purchases are made at prices considerably below those above quoted.

Nails.—There has been no material change in the situation during the past week: while there is a fair business in the aggregate, orders are mostly small, and it is of lower prices, although there has been no decline during the past few weeks. We continue to quote at \$2, 60 days, 2% off for cash, in car lots, and 5¢ @ 10¢ \$\mathbb{P}\$ keg additional in a jobbing way. Steel Nails 15¢ P keg more than Iron Nails. As stated in our last, Shoenberger & Co. have commenced to make Steel Nails, and it is understood that Zug & Co. will do likewise as soon as they can get their arrangements perfected. It looks as if the Steel Nail was about to go into general use, and that the Iron Nail, like the Iron Rail, will soon be a thing of the

Wrought-Iron Pipe.-The demand is not as good as it was a few weeks ago, and, while the mills appear to be pretty well employed at present, the outlook for the future is not as promising as it might be. Prices continue irregular and unsatisfactory, and for large, desirable orders lower rates than those quoted are, it is said, being accepted. A meeting of manufacturers will, it is understood, be called shortly for the purpose of adopting a new list. Discount on Black Butt-Welded Pipe, 40 %; do., Galvanized, 30%; on Black Lap-Welded Pipe, 60%; do. Galvanized do., 40 %. Discounts on Boiler Tubes, 52 1/2 @ 57 1/2 %. Two-inch Oil-Well Tubing, 12¢ P foet, net; 5%-inch Oil-Well Casing, 40¢ 7 foot. For Selected Pipe or Pipe cut to special lengths discount 5 % less than the rates quoted.

Steel Rails-Are firmer, and we now quote at \$28 @ \$29, cash, at mill. It is claimed that there have been no sales made here below \$28, and \$29 is now the asking ers. It is admitted on all hands that the price, although it is probable that a desirable Iron business in all its varied departments is order for near-by delivery could still be placed at \$28.

Old Iron Rails,-The market here continues very dull, and in the absence of sales we repeat former quotations, viz., \$19.50 @

Railway Track Supplies.-There is a little doing that it is difficult to give reliable quotations. The combination price for Spikes remains unchanged at 2.35¢, 30 days, but they can be bought for considerably less.

Crop Ends .- American have been sold as low as \$17.50, cash; may be quoted at \$17.50 @ \$18.

Steel.-Steel Slabs for making Steel Nails are becoming quite an item in the Steel trade. and some of the mills are giving this branch considerable attention; we hear of one sale of 1000 tons and another of 300, quoted at \$31 @ \$32 P ton. Best brands of Re fined Cast Steel remain unchanged at 91/4 @ 10¢; do. Crucible Machinery, 5¢; Open-Hearth and Bessemer do., 3¢.

Serap.-The Scrap trade continues exedingly dull, and there is so little doing No. I Wrought is nominal at \$18 @ \$10 7 net ton; Wrought Turnings, \$14 @ \$15; Old Car Axles, \$25 @ \$26; Cast Borings, \$12 @ For Refined grades following quotations \$12.50, gross; Old Car Wheels, \$16.50 @

Window Glass .- A fair business is reorted, but prices are unsatisfactory. Discounts are quoted at 70 and 5 % on Single and

Cuke .- Trade continues dull : combina-

#### Chicago.

Office of The Iron Age, 36 and 38 Clark St., Cor. Lake St., CHICAGO, October 6, 1884.

Hardware.-There is no change in the ondition of the Hardware market. Orders are plentiful and of no mean proportions. Jobbers are several days behind in supplying the demand, which is somewhat in advance of what it was for a similar period a year ago. As the season progresses more cutting in price on some lines of goods becomes apparent. In Tin Plate a reduction of 50¢ has been made. Sheet Zinc has been reduced from 6¢ to 51/2¢, and manufactured goods are correspondingly weak. The liberal instructions to salesmen for wholesale jobbing houses (in order to hold old customers)-to "meet reductions of competing houses"-are in part to blame for some of the recent low prices. New price lists have been issued by some of the houses, which reduce the price on certain lines. Other jobbers follow in the wake and "go one better" on their list, until the margin is lost to the jobber and his goods are being sold at cost. Prices that are thus shaken are necessarily weak and cannot be relied on.

Barb Wire,-The demand for Barb Wire only fair, and principally in small lots. The effort on the part of manufacturers to form a syndicate and establish a price higher than present quotations has thus far been unsuccessful. Another meeting will be held next week to further consider the subject. 51/4 and Painted at 41/2. Notwithstanding the statements that their prices are lower than the Wire can be made for, the new Barbed Wire company at Joliet, Ill., expect to be in operation before the close of the month. It is said that they claim advantages which will enable them to make Wire at 20 % less than present prices.

Nails.-The demand for Nails during the week past has been largely for 10 to 50 keg lots. In lots of this size Wheeling and Pittsburgh Nails are quoted at \$2.20, and car lots at \$2.15, 2 %, 60 days. The demand for car lots has dwindled to almost nothing, and, when such orders are open for quotations, shading to the extent of 5¢ is always expected. One lot of considerable size was evident that jobbers are still apprehensive offered at \$2.10, 2 %, by a mill which is carrying more than its usual amount, without being accepted. The aggregate sales make a fairly active demand when the conditions of the market are considered.

American Pig Iron.-The strength of the Pig Iron market here seems to have had its effect on districts remote from this city. Letters from makers announcing higher prices are being received, and the general tone has an upward tendency. Particularly is this true of Southern Irons. Makers have evidently become tired of the low and unprofitable business of the past six months. But obtaining higher prices is a much slower and more difficult operation than reducing them. The market is undoubtedly stronger than a month or six weeks ago. Offers then made are withdrawn, and sales made at the lowest points are not duplicated. Furnaces are not contracting for more than 60 to 90 days' advance sales, as a rule; others for immediate delivery only. But when we come to write prices higher than our quotations which have been obtained on the same brands of Iron, we cannot find them. So much selling has heretofore been done on private terms, or at figures which, from surrounding circumstances, could not be regarded as a market price, that there has thus far been sufficient margin below quotations to meet the strength of the market. Quotations that some time ago were the prices for almost any buyer are now bottom for the best trade. The market is firm and apparently so well cleaned of odd lots that there is a fair chance for better prices, with an additional improvement in general business. During the week 25¢ has stood between sellers and buyers and deferred sales of some 3000 tons of Lake Superior Charoal Irons. For present delivery we continue the following quotations on carload lots, four months: Lake Superior Charcoal, Nos. I. 2 and 3, \$21.50; Nos. 4, 5 and 6 at \$22; Lake Superior Coke at \$20; Lake Superior and Ohio, mixed, at \$20 @ \$21; Ohio Standard Black Band, No. 1, at \$21; Southern, No. 1, at \$18; No. 2 at \$17.50; Silvery Soft at \$17.50 @ \$19 50; Anthracite. No. 1, at \$21, and No. 2 at \$20.

Scotch Iron.-We have nothing of importance to note in the conditions of the and irregular. We quote as follows: net ton, \$13; Buggy Springs, & net ton, Summerlee, \$25.50, cash, from yard, and \$14.50; Malleable Scrap, \$5. \$24.50 to arrive; Glengarnock, \$25.50 from vard, and \$24 to arrive.

Merchant Steel .- Some improvement is reported in the demand for Steel among the makers of the best brands of Tool and Machinery grades. A few inquiries for Toe Calk are also reported, but light selling, the season being a little early. The market offers no inducement to buy beyond what is necessary for immediate use. Prices are weak and irregular, and cutting continues. For Refined grades from store we make the

Tono wand dancara	Per pound.
Best Refined Cast Tool Steel	
Crucible Cast Machinery Steel	
Open-Hearth and Bessemer Steel	
Open-Hearth Spring Steel	
Toe-Calk Steel	314 @ 3160
Fire-Box and Boiler Steel	474 66 5 6
Syndicate Steel	7 @ 7366

Steel Rails.-The market for Steel Rails

report. The popular quotation in this market is \$30 ? ton, though it has been inferred that less would be accepted by one of the mills rather than lose an order when in need

Old Rails -The market for Old Rails is pretty firm, and the most of the marketable stock in strong hands. One lot of 1000 tons was sold during the week at a distant point, equal to \$18.50, Chicago, on a low freight rate. Quotations by mills are from \$18 to \$19, which are not acceptable to holders, who are asking about \$1 \$7 ton more.

Structural Iron. - Several large structures which are contemplated in and out of the city have given new life to the builders' Iron market. Most of the mills are on the verge of idleness, and competition for the trade in prospect is quite strong. Indications are that, if the weather permits, there will be more building in this city during the coming winter than was looked for, and makers of Beams and Channels are accordingly revived. We continue fo'lowing quotations, with 1/4 @ 1/4 added for delivery from stock: Beams, \$3.60; Channels, \$3.60; T Iron, \$3; Angle Iron, \$2.50; Flitch Plates, \$2.50; Frieze Plates, \$2.70.

Bar Iron.-The demand for Bar Iron is steady and fairly active. There is perhaps less advance buying than several weeks ago, but consumption throughout the country is from appearance as strong as at any time during the year. The aggregate sales amount to something less in dollars, because some of For car lots Galvanized Wire is quoted at the Iron goes out on contracts made by Implement manufacturers whose purchases have already been added to the amount of sales, but the tonnage is equal to any time in the past. Best Refined New Puddled Iron is quoted from store at \$1.85 @ \$1.90. Common Iron is weak in price from mill, and from store is quoted at \$1.70 @ \$1.80. Ulster Iron is quoted at \$3.65 @ \$3.75.

Norway Bars .- During the week there has been a fair market for Imported Bars. Merchant price is \$3.75, as before, and consumers 4¢ rates. Heavy buyers who are consumers can, perhaps, shade this price a

Galvanized Iron.—The Galvanized Iron market and the syndicate are considerably disturbed by the recent break in prices. More trouble has in part been anticipated, but to determine exactly from whom it comes does not prove to be an easy task. Makers who are not in the pool are inclined to secure trade at the expense of prices prevailing for some time back, and, at the same time, are unwilling to enter the combination. Trade has not been very brisk with some of late, and work at less profit seems preferable to idleness; besides, it further introduces their Iron, which may not be so well known as some other brands. There is no change in quotations since last week, which are as follows: Juniata, 55 % off; Charcoal, 57 % off, and Refined, 60 % off.

Black Sheets .- The Black-Sheet market has been fairly active during the week, as reported by makers. Buying has been largely in small lots, on which mills claim that they are realizing better prices than several months ago. Jobbers are on the bear side and report trade dull in large lots, and for Light Sheets active in small lots. As the principal part of the buying by consumers is from jobbers, we give an open quotation of the price that they are selling at. For some time back there has been a local distraction in prices on Black Sheet between jobbers, which has been the means of placing the Iron within the reach of consumers at as low as, if not less than, wholesale figures at the mill. We quote as follows from store: Nos. 10 to 14 at \$2.60 @ \$2.70; No. 24 at \$2.80; Nos. 25 and 26 at \$2.90, and No. 27 at \$3.

Old Wheels.—The market for Old Wheels is reported quiet and firm. There are intimations that Old Wheels are scarce and none offering, and at the same time that there is no demand. Foundries are bidding value in the absence of sales.

Scrap Iron.-The Scrap market is the same as last week. We hear of some inquiry for Steel Scrap, but nothing of importance in other grades. Mills are quoting \$15 @ \$16.50 for No. 1, and \$11 for No. We make the following quotations as dealers' purchasing prices : No. 1 Wrought Scrap, & net ton, \$14.50; Cast Scrap, & net ton, \$12; No. 1 Stove-Plate Scrap, P net ton, \$8; Wrought Turnings, P ton, \$8; Castmarket for Foreign Iron. Buying of small Iron Borings, \$6; Old Plow Steel, \$9; Tool lots constitutes all the trade, which is light Steel, ? ton, \$15; Locomotive Steel Tire, ?

> EVERETT & POST, 156 Lake street, Chiago, report to us as follows, under date of October 6, 1884: Pig Lead -This market has ruled very quiet, though firm, during past week at \$3.60, and sales of some 700 tons Common and Refined to local consumers are reported. The offerings are not large, but enough to supply all present requirements, trade being only of a jobbing character. The statistical position of Lead would point to a maintenance of present prices, but all depends upon consumptive demand.

#### Chattanooga.

Office of The Iron Age, Carter and Ninth Sts., (CHATTANOGA, October 6, 1884.

The weather during the week has been very hot, extremely so for the season, and very much discouraged, and the indications tion price remains unchanged at \$1.10 P has been very quiet during the week. this has a very depressing effect on outside Makers have neither inquiries nor sales to operations. It has also shut down on sales

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of all kinds of fall goods and materials generally in market at this time of the year. Heavy building labor, especially, goes slowly. Building materials have latterly improved in cause been very much shortened by shedding; especially that growing on the heavier uplands of Georgia, Alabama, Tennessee, North Carolina and Virginia has suffered. Streams are almost dried up, and there is much sickness, fevers being prevalent even in the mountain settlements and villages. Wages continue liberal, and labor is generally employed throughout the section, though Coal operators and cotton-mill managers have made small reductions.

Pig Iron.-The improved feeling in the market for crude metal continues. Higher grades grow scarcer, and prices tend to improve. No. 1 Coke, Foundry, is quotable at about \$17 for carload lots on cars at furnace, cash. Holders generally refuse orders for future delivery at any rates offered by buyers. Large lots for cash are \$13 @ \$14 for Mill, and \$16 @ \$16.50 for Foundry. We continue to quote small lots, 60 days: No. 1 Foundry, \$17 @ \$18; No. 2 Foundry, \$16.50; Gray Forge, \$14 @ \$15; White and Mottled, \$13 @ \$14; Car-Wheel Metal, \$22 (@ \$24.

Ores.-We quote Fossiliferous Ores, averaging about 50 % Metallic Iron, \$1.50 P ton. delivered at river landings; higher qualities, \$2. Brown Hematite, \$2 @ \$2.25 on cars at

Miscellaneous Articles.-The scarcity and stiffer price of Pig Iron develops inquiry for old materials, but holders and consumer are generally apart in their views. Old Rails are nominal at \$16; Old Wheels, \$16; Wrought Scrap, No. 1, \$14; No. 2, \$11; Cotton-Tie Clippings, \$10.

Merchant Iron.-We quote Bar steady at \$1.70 for large assorted bills; Spikes, \$2.25; Bolts, \$2.50 @ \$2.75; Splices, \$1.70. There is an improved demand for Track Supplies.

Nails.-The demand for Nails is somewhat improved. We quote at \$2 @ \$2.15 for carloads : \$2.25 from stores.

Barb Wire. - Cambria and Four-Point, Galvanized, 6¢ % b.

Coal .- The pool lately formed by Southern Coal operators seems destined to go the way of all similar combinations. The operators in the Knoxville district are finding out that Chattanooga and Birmingham have decided advantages and are using them to get and hold the big end of the trade, and there is a "kick." We quote Fancy Lump at \$3; Common Lump, \$2; Egg, \$2.25, delivered. Run of mine to manufacturers, \$1.50 at

Coke.—We quote at \$2 @ \$2.25 at ovens Foundry Coke at 8¢ @ 10¢ P bushel.

#### Cincinnati.

OCTOBER 6, 1884.—Pig Iron.—Since last week's report there has been no change in any of the conditions of the market. Supply and demand remain as before, except that the inquiry for Hanging Rock Silver Gray Softeners is in excess of ability of furnaces to supply. The Virginia, Tennessee and Alabama Irons continue to be offered freely, and at prices that are agreeable to consumers for present and future uses. Furnaces that are now idle in this region and the consumers will not enter upon any active ransactions until after the October elections.

Some have shut down until after the Presidential election, "to resume only if Blaine and Logan are elected." Following are the quotations:

HOFFER & Co., of St. Louis, report to us as follows, under date of October 6, 1884:

Trade here remains unchanged. We quote prices same as last week: transactions until after the October elections.

HANGING ROCK CHARCOAL FO	UNDRY.	
No. 2, \$1 less.	321.00 @	\$21.56
TENNESSEE AND ALABAM	A.	
No. 1	19.00 @	19,50
COKE FOUNDRY.		
No. 1 Hanging Rock No. 1 Virginia, Tennessee and Ala-	18.00 @	18.5
bama No. 2 Virginia, Tennessee and Ala-	17.00 @	17.5
bama	15.50 @	16.0
STONECOAL FOUNDRY.		
Silver Gray Softeners, No. 1	18.50 @	
No. 8	17.00 @ 15.50 @	17.50 16.0
FORGE.		
Stonecoal, Coke and Charcoal	15.50 @	20.0
CAR WHEEL.		
Hanging Rock, Cold Blast	26.50 @	
Hanging Rock, Warm Blast	22,00 6	98.00
Southern Warm Blast	94.00 @	25,0

#### Louisville.

W. B. BELENAP & Co., Iron and Steel Merchants, Nos. 115 to 121 West Main street, Louisville, under date of October 6, 1884, report as follows: Bars are still in same de-pressed condition that we have been obliged to report for months. If anything, the de-mand grows lighter and the price corres pondingly weak. No one ventures to hope pondingly weak. No one ventures to be for better times till after the election. So with apparent reason, name the first of the next year as a probable period of revival, while the more cautious prophets place it as while the more cautious prophets place it as far way as the midsummer of 1885, "should the crops prove good." Meanwhile the shrinkage goes bravely on. We note in this connection reductions in wages by Dilworth, Porter & Co. and Oliver Bros. & Phillips, at Pittsburgh, of 10 % and 12 ½ % respectively, which tells its own story. Sheet Iron.—Demand is unusually light, and the advance almost invariably realized at this season has not put in an appearance. The voluntary increase of discounts on those but recently established by the galvanizers goes to prove, what most by the galvanizers goes to prove, what most of us know, that it is a bad year to attempt to put prices up. There is apt to be leakage

enough somewhere to neutralize the best Downing R. F. efforts of those in earnest in such movements.

Steel.—There is no change in such grades of Cast Steel as are recognized first Building materials have latterly improved in demand, and prices are better than for some time. Lumber is in good request, and mills are busy. There has been no rain in the entire cotton belt for more than a month. The chief crop of the South has from this cause been very much shortened by shedding; improved process they are able to two ordinates. The chief crop of the South has from this cause been very much shortened by shedding; improved process they are able to two ordinates. The base are recognized first quality. The brands less well known for fine type met. The plates, and uniformity are put upon the market at various figures. The use of Bessemer for Tools is increasing, and many of the "Solid Cast Steel" Tools, Sledges, &c., are entirely innocent of the crucible. Some of the manufacturers of Bessemer claim that by improved process they are able to two ordinates. improved process they are able to turn out a product suitable not only for Heavy but a product suitable not only for neavy our for Edge Tools as well, and that good Chisels, Shears and Razors will presently be made in large quantities from Bessemer Steel. If this be so, and there is already evidence to substantiate the prediction, the granger to substantiate the prediction, the granger will get a larger return for his 75¢ wheat than he ever did when it brought \$1.

The Steel Shape and Plow combinations formed some two months since have gone to pieces, and such new concerns as expected a favorable year to start in cutting syndicate prices will be sadly disappointed. Competition promises to be keen. Nails.—

The preparation of the various leading Nail factories to make Steel Nails threatens to Pig. 100s. 5 factories to make Steel Nails threatens to speedily extinguish the difference in market price heretofore existing between Steel and Iron Nails. Shoenberger, Belmont, Ben-wood, Belfont and Standard have, we learn, Pierson & Co. Sheets, bdla definitely decided to undertake the manufac-ture of Steel Nails, if not exclusively, at least in connection with the Iron. The main objection to the Steel Nail so far is the expense to the Steel Names har is the expense to the jobber of carrying two stocks. Prices are weak for all kinds of Nails. It is claimed by agents that The Iron Age's late reports from Chicago were colored by information from jobbers who were more anxious to buy than to sell. However that may be, they expressed near enough the true condition of affairs to be believed and to shake confidence in prices. Metals.—Pig Lead

Atlas S. S. Co. surprised the trade by suddenly advancing 1/4 1/2 lb, and it is scarce in this market at that, as no stocks are on hand.

Local trade has been materially assisted

by the exposition, which has attracted large crowds from the contiguous country. Failures are unpleasantly frequent, and a number in Southern towns heretofore noted for their progress and prosperity. This is but natural, as adventurers with capital too small for business were attracted to these pursuits by third quarter of the year 1884: the prospect of making money rapidly. In three or four cases which we have in mind stock was sold out suddenly and completely, and outside creditors left to rake whatever and outside creditors left to rake whatever they could get or whatever the parties chose to offer. This sort of experience is enough to make us want a new bankrupt law, and if one could be drafted that would keep the assets for the creditors proper, and not permit assignees and registrars and the courts to get all of them, one would certainly meet with universal approbation. Weather is extremely hot; the mercury is in the nineties. It is propitious for ripening corn, for planting winter wheat, and, coming as

it does after rain, for pasturage. GEO. H. HULL & Co., Commission Merchants, report to us as follows, under date of October 6, 1884: There is a stronger and more active market for Pig Iron, and some satisfactory sales, both for present and distributed delivery, are being made. Prices are firm and tending upward:

PIG IRON.			
Southern Coke, No. 1 Foundry	\$17.50	0	\$18.00
" No. 2 "	16.00	0	16.50
Hanging Rock Coke, No. 1 Foun-	10.00	_	40.00
Hanging Rock Charcoal, No. 1	18.00	(4)	18,50
Foundry	22,00	276	23,00
Southern Charcoal, No. 1 Foundry			19,00
Silver Gray, different grades	16.00		17.00
Southern Coke, No. 1 Mill, Neutral,			****
" No. 2 " "	14.00		
" No. 1 " Cold-sh't.			14.50
Southern Charcoal, No. 1 Mill	16.50		18.00
White and Mottled, different grades	13.00	0	18,50
Southern Car-Wheel, standard			
brands	25.00		26,00
Southern Car-Wheel, other brands.	22.00		24.00
Hanging Rock, Cold-blast	26.00		27 00
" Warm-blast	21.00	0	22.00

#### St. Louis.

HOT BLAST CHARCOAL IRONS.	
Missouri	.00
COAL AND COKE IBONS.	
Missourt	.00
MILL IRONS.	
Red-short	,00
Missouri	.00

#### Baltimore.

W. N. WYETH, Iron and Steel Merchant, 46and 48 South Charles street, reports us the following, under date of October 6, 1884: Frade has ruled from fair to satisfactory for the past week as regards tonnage, but, as a whole, at very close figures. We quote the market as fairly active, with values shading

0
Ref. Bar Iron, 1 to 6 x % to 1 P D 19-10 @ 2 #
" " 1 to 41/4 x 11/4 to 1 @ 10 1 9-10 @ 2 @
" " 34 to 2, Round
and Square 2 10 1 9-10 @ 2 @
Hoop Iron, 116 wide and upward " 294 @ 8 #
Band Iron, from 11/4 to 6 in. wide " 21/4 @ 2 6-10#
Horse-shoe Iron " 81-10 @ 32-10¢
Norway Nail Rods " 5 @ 51/4 ¢
Black Diamond Cast Steel " 10 @ 11 *
Machinery Steel " 41/4 @ 5 ¢
Spring Steel " 4 @ 41/4 #
Common Horse Nails " 10 @ 11 ¢
Railroad Spikes, 51/4 x 9-16 " 21/4 @ 2 6-10#
Perkins's Horse Shoes, W keg of 100 fb \$3.871/4
Mule Shoes 4.873

#### Imports and Exports. IMPORTS.

The following were the Imports of Hardware, Iron, Steel and Metals into the Port of New York for the week ending Oct. 7, 1884:

Metals.	Crooks Robert & Co. Tin plates, bxs., 6:
Sing, Ford & Co. Metalware, cs., 26	Cushman P. Zinc, casks, 12 Cas es, 27
Terne and bl'k pits.,	Dickerson, Van Dusen Co.
bxs., 1000	Tin plates, bxs., 2

_		0 1 1 1 0 1
4	Downing P F & Co	Moston Plies & Co
t	Downing R. F. & Co. Nickel, casks, 7	Morton, Bliss & Co.
-	Foote Emerson,	Plates, 36
h	Nickel, cs., 5	Sheets, 16 Plates, 36 Moss F. W.
st	Frazer James.	Bundles, 116
) -	Type met., ing'ts, 760	Bars, 103
t	Lead, pigs, 9 Ketchum E. & Co.,	Cases, 2
r	Tin plates, bxs., 605	Naylor & Co. Billets, 163
d	Naylor & Co	Rods, 2015
	Tin plates, bxs., 1948	Rods, bdls., 3400
y	Phelps, Dodge & Co.	Steinway & Son,
0	Tin plates, bxs., 5635	Wire in coils, bdls., 19
y	Thebaud Bros. Old comp. tubes, 259	Rods in coils, 13 Cases, 33
t	Order.	Order.
t	Tin pl'ts, bxs., 28,781	Casks, 37
3,	Plumbago cks., 150	Casks, 37 Cases, 14
0	Plumbago eks., 150 Antimony, bdls., 100	Bundles, 363
	11n plates and tag-	Packages, 125
*	gers, bxs., 625	Rods, pkgs., 145
0	Iron.	Bardware.
r	Baring Prog & Ca	Little William Co.
t	Baring Bros. & Co. Rods, bdls., 441	Boker Hermann & Co.
	Cary & Moen, Rods, bdls., 441	Hdw. and cutlery.
8	Rods, bdls., 441	pkgs., 34
е	Commission I. D. Of Co.	Degraw, Aymar & Co.
	Sheets, bdls., 361	Mdse., cs., 3 Diamond Rock & B. Co.
	Crocker Bros.	Machinery cs., 12
5	Pig. tons, 400 Spiegel, tons, 2281/4	Drexel, Morgan & Co.
	Gusenheimer & Co.	Arms, cs., 12
an-	Silico spiegel,cks., 70	Eads J. B.
1	Lillienberg, N.	Machinery, cs., 7 Folsom H. & D.
0	Pig, tons, 5	Folsom H. & D.
t	Lundberg Gust.	Arms, cs., 18 Frasse P. A. & Co.
1	Bars, 858	Mdse., cs., 4
	Bales, 21 McComb J. J.	Graef Cutlery Co.
-	Cotton ties, bdls., 8768	Cases, 5
2	Pierson & Co.	Hartley & Graham,
	Sheets, bdls., \71	Arms, cs., 14
t	Stetson Geo. W. & Co. Pig, tons, 550	Mdse., cs., 7 Kursheedt Mfg. Co.
1	Williamson for Co	Machinery, cs., 4
	Williamson Jas. & Co. Pig, tons, 300	Lalance & Grosjean,
	Order.	Mdse., cs., 8
	Pig, tons, 700	Marekwald T. D.
	Cotton ties, bdls, 1320	Machines, cs., 2 Moore's Sons J. P.
В	Ore, tons, 762	Arms, cs., 18
1	Galv. sheets, bdls, 61	Arms, cs., 18 Rogers H. & Co.
3	Rail ends, tons, 200 Wire rods, bdls., 245	Wire ware, cs., 3
6	Rods, pkgs., 3662	Schoverling, Daly &
9		Gales,
5	Steel.	Arms, cs., 48
il	Atlas S. S. Co.	Struller, Lau & Co.
1	Piston-rod, 1	Arms, cs., 35 Turion J.
	Baring Bros. & Co.	Arms, cs., 3
1	Wire rods, pkgs., 194	Wessels G. & Co.
-	Baltzer & Lichtenstein,	Machinery, cs., 1
1	Rode, hdla 284	Wiebusch, Hilger & Co.
, 1	Cary & Moen,	Hdw. and cutlery,
	Cary & Moen, Wire, bdls., 11 Lazard Freres,	Order
. 1	Wire rods, pkgs., 1059	Hdw. and cutlery, pkgs., 30 Order. Skates, cs., 10
	troug.paga., 1000	contract contract
1	PRIS	

The following are the imports of Hardware, Metals and Cutlery at this port for the

l		Quantity.	Value.
ı	Antimony	827	46,271
	Anvils	900	5,775
	Brass goods		53,905
•	Bismuth		2,452
8	Bronzes		55,784
	Chains and anchors	289:23	17,988
1	Copper		81,512
	Cutlery,	1,477	464,676
H	Gas fixtures		6,182
1	Guns		874,406
1	Hardware	100	10,235
١	Iron, hoop, tons	***	14
1	fron, pig, tons		737,064
	Iron, sheet, tons	636	89,996
. !	Iron, ore, tons	6,450	14,667
1	Iron tubes	4	850
1	Iron, cotton ties	30,219	22,617
1	Iron, other, tons	18,322	750,474
1	Lead, pigs	9,038	26,411
1	Machinery	798	69,260
1	Metal goods	4,146	390,332
1	Nails		5,784
1	Needles		70,975
1	Nickel		96,887
1	Old metal	****	257,6543
1	Platina	90	60,688
1	Platedware	118	12,528
1	Plumbago	8,817	79,461
1	Percussion caps	172	23,008
1	Pins	100	20,087
1	Ouicksilver		18,447
1	Saddlery		24,177
1	Steel		879,461
1	Steel blooms	1,828	4,412
1	Spelter, lbs		41,215
1	Tin plates, boxes	513,994	2,276,338
ı	Tin slabs, lbs6,	757.54%	1,274,265
1	Wire		68,497
1	Zinc, lbs.	114.668	27,917
1	Copper ore, tons	1.070	5,848
-1	Cobber ore! some server receives	20000	010.63

The following is a comparative statement of the imports of Metals at this port during

he third quarte	1882.	1883.	1884.
Copper and ore	44,588	19,987	87,890
ron, bars	738,978	605,805	750,474
ron, pig	1,659,730	1,151,841	787,064
ron R. R. bars	86,652	5,812	
ron, sheet	185,688	78,708	89,996
ead	55,286	18,791	26,411
pelter	221,279	49,720	41,215
teel	1,412,706	876,059	879,461
lin slabs, fb	1,051,922	1,006,649	1,974,265
l'in plates, bxs	2,984,867	8,098,699	2,276,338
inc	45,425	23,383	27,917
1	PYPOP	PTS	

The following were the Exports of Hardware, Iron, Machinery, Metals, &c., from the Port of New York, for the week ending October 7, 1884:

October 7, 10	ord .		
Dutch West	Indics.	Liverpool	
	nan. Val.	Quan.	Va
Nails, kegs	13 \$28 146 329	H. grenades, bxs 50	200
Ptim., gals	2 39	bxs 50 Guns, cs 9	1,5
Clocks, cs	1 85	Saws, cs 10	1,00
Cutlery, case.	2 68	Cop.ore, bgs26,510	
Hdw., pkgs	4 58	Wringers, cs. 8	110,0
Mach'y, pkgs.	18 522	Mf. iron, pkgs 57	2.77
Sew. ma., cs	B10	Ag.imp., pkgs 40	1,4
To 00.000		Cop. residue 100	12,00
Ptlm., gals.789,5	20 72,850	Door spgs, cs. 29	1,00
Copenhag		Pumps, pkgs. 8	QI
		Bell 1	- (
Hdw., pkgs Mf. tron, pkgs		Hdw., pkgs 127	8,9
Clocks, cs	4 228	Mach'y, pkgs. 19	1,8
	-	Copper, pigs., 949	23,66
Christian	1444	Ptim., gals. 473,853	
Mf. iron, pkgs	9 80	Sew ma., cs 256	
Hambut	ra.	Clocks, pkgs., 797	16,1
	-	Metal, cs 8	25
Iron pipe, pks i Ptim., gals.283,3		Rotterdam	4
Sew. ma., cs12	869 97 880	Ptlm., gals.292,671	23.4
Mf. iron, pkgs. 1	34 856	Gas b'nrs, cse 1	1
Ag.imp., pkgs		Copper casts., 24	8,9
Steam pump		Pumps, pkgs. 81	9
Saws, cs	12 32	Copper, bars. 840	5,7
Clocks, pkgs	9 430	Ag. imp., pkge 1	1
Clocks, cs	51 712	Antwerp.	
Stockhol	205.	Ptim., gals.776,131	61.0
Mach'y, pkgs.	15 2,200	Mf. iron, pkgs 45	91
Ptim., gals.107,1		Hdw., cs 15	3/
Stattin		Clocks, pkge 1	4
		Iron drums 13	1!
Ptlm., gals.155,8		Hull.	
en 1-5 MM4	W 44	*******	

Bremen.

Ptlm., gals.155,866 12,247	Hull.	15
Danish West Indies       Cutlery, cs     4     40       Nails, kegs     8     34       Ptlm., gals     3090     290       Scales, cs     7     45       Hdw., cs     6     89	Copper, pigs 194 Clocks, pkgs 70 Hdw., cs 140 Ag. imp., pkgs 9 Mf. iron, pkgs 4 S. rollers, cs 10	3,10 1,34 2,33 42 11 28

Bremen.	British East Indies
Ptlm., gals.427,380 27,780 Pistols, case. 1 50	Ptlm., gals.350,000 34,750
Wire brushes, case 1 250 Print'g press. 1 80	Sew ma., cs. 617 8,000 Iron safes
Amsterdam. Ptlm., gals57,846 81,610	Sharpness. Ptlm., gls.502,036 41,41
Ag.imp., pkge 1 56	Mach'y., pkgs 4 15 Ag. imp.,pkgs 11 21
	Ptlm., gals.427,390 27,780 Pistols, case. 1 50 Hdw., cs 6 152 Wire brushes, case. 1 250 Print'g press. 1 80 Mf. iron, pkge 1 65 Amsterdam. Ptlm., gals57,846 31,610 Hdw., pkgs 18 436 Ag.lmp., pkgs 1 56

Quan. Val Ptlm., gals. 124,208 10,658 Iron safe Dublin. Ptlm., gals. 225,997 19,210 Limerick. Ptlm., gals.178,630 14,290 Hong Kong. Rifles, cs. .... 7 London.

Carringes, cs. 551 13,472
Windmills, cs. 4 221
Mach'y, phgs. 1366 10,281
Hdw., phgs. 366 10,281
Nails, cs. 25 683
Mf. iron, phgs. 21 261
Empty shells, cs. 4 467
Safety pins, cs. 2 400
Iron tauks. 80 2,700 Nova Scotia.

Genoa.

Leghorn.

Liberia. Mf. iron, pkgs 54 Ptlm., gals....6550 Brass kettles,

140

Pumps, pkgs. 2

Hdw., cs..... 5 90 Ptlm., gals..15,250 1,575 Mf. iron, pkgs 2 11 British Guiana. Mach'y, pke. 1 Ptlm., gals,10,000 Clocks, pkgs. 4 250 994 

New Brunswick.

Ptlm., gals. 40,500 4,200
Pig iron, tons 59 850

\*\*Mordeaux.\*\*

\*\*Mf. iron, pkgs 66 775

\*\*Windmills, cs. 5 200

\*\*Ptlm., gals. 392,143 19,750

\*\*Pumps, case. 1 85

\*\*Pumps, case. 1 85

\*\*Pulm., gals. 348,014 20,735

\*\*Pulm., gals. 348,014 20,735

\*\*Pulm., gals. 40,500

\*\*C. whis. on a., pairs. 4

\*\*Philip seq. 14,20,200

\*\*C. whis. on a., pairs. 4

\*\*Philip seq. 14,20,200

\*\*C. whis. on a., pairs. 4

\*\*Philip seq. 14,20,200

\*\*C. whis. on a., pairs. 4

\*\*Philip seq. 14,20,200

\*\*Prim., gals. 40,500

\*\*Pulm., gals. 40,200

\*\*Pulm., gals. 40,200 Ptlm., gals.248,014 20,735 Nails, kegs... 6 21 Valencia. Ptlm., gals.165,847 13,665

Havre. 

Ag.imp., pkgs 2 90 French Possessions

Lisbon.

Ptim., gals.101,798 8,040

Porto Rico.

### Foreign Markets.

FRANCE.

Paris. September 22, 1894.—Metals.—Business continues picking up a little and metals are higher, with the exception of Tin, which is lower. We quote at the close, in francs, \$\overline{2}\$ 100 kg.: Copper.—Chill Bars, 140 @ 144.25; Ingots and Slabs, 145; Best Selected, 148, and Fure Corocoro Ore, 147.50; Tin.—Banca, 228; Billiton, 220; Straits, 218; Australian, 218,75, and English, 215. Lead, 25.50 @ 27.50, and Spetter, 37.75 @ 38.25. Iron—The market in this city has become dull, weaker and nominal, the end of the building season being at hand. Old Iron Rails have sold as low as 8.75, and Steel ditto at 7 francs \$\overline{2}\$ 100 kg. We quote, nominally; Merchant, 15.50 @ 16; Flooring Iron, 18; Charcosi Merchant, 34; Sheets, 20 @ 25, and Wire Nails, No. 18, in bulk, 37. In the North matters are stagnant; the Anzin Company has blown out a blast furnace. In the Meurthe and Moselle, on the contrary, production of Pig is being increased. The output for the first six months, however, shows a falling off, having been 300.505 tons of Pig, against 325.303 tons the second half of 1883. In Central France, at St. Etienne, the Terrenoire Company have received orders from the Navy for Steel clads. The fall season in the Iron trade sets in late this year, but may yet develop vigorously, as the elements constituting the general prosperity of the country are sound and full of promise. The fact is that the paralysis in Southern France has been a serious check from which we are now gradually recovering. Coal steady.—Moniteur des Intérets Materiels. GERMANY.

GERMANY.

2,335
427
DORTMUND, September 22, 1884.—Iron.—There has been a quiet feeling in the Iron trade during the week. Owners of blast furnaces show little an interpretation of the last quarter, anticipating as they do a further fall in prices. They prefer nowadays buying from month to month, owing to the competition of Spanish Ore laid down at low freight rates at Ruhrort and Hochfeld. In order to enable Nassau and Slegen to compete with Spanish, railroad of reights would have to be lowered. Domestic Pig is selling at figures barely covering the cost of production; this relates to Spiegel in particular. There is but little demand for Pig, the rolling mills buying from hand to mouth. English Besemer Hematite has been in better request lately, but the enormous stocks both in West Cumberland

Quan. Vai Sawmill ... 1 980 for the same. Luxembours and lise de Thomas of the same. Luxembours and lise de Thomas Pig move off steadily, but at irregular rates. Rolling mills are, on the whole, tolerably well rolling mills are good dealing and if guite to the maker. This may also be said of rolled wire and hoops; the latter are favored by the abundant vintage. There is a good demand, too, for Sheets of all society, the latter are favored by the abundant vintage. There is a good demand, too, for Sheets of all society, and so the international Syndicate does not appear to be domestic demand for Steel Rails is satisfactory, the International Syndicate does not appear to be makers, foundries and machine shops are all quite with the contrary is the case with ear shops and bridge-building concerns. —Cologne Gazette.

HAMBURG, September 23, 1884.—Iron.—In Upper Silesia the production of Pig has been curtailed, but only temporarily so, as the general capacity of production will soon be greater than ever before. Meanwhile, the market has been firmer, though not higher, Puddling being worth 5.40 marks § 100 kg., and Foundry 6 & 7. Rolling Mills

and bridge-building concerns.—Cologne Gazette.

Hamburg, September 23, 1884.—Iron.—In Upper Silesia the production of Pig has been curtailed, but only temporarily so, as the general capacity of production will soon be greater than ever before. Meanwhile, the market has been firmer, though not higher, Puddling being worth 5.40 marks 9 100 kg., and Foundry 6 & 7. Rolling Mills are busy and some have closed contracts for Rods to the end of the year. Prospects in Tupper Silesia in all Finished Iron are promising, and the only obstacle in the way of an advance is the fear of competition from Rhenish Westphalia. Meanwhile, even the export to Russia has been resumed to meet the new duty of 12 copels & pud additional, to become operative on March next on Pig Iron, as the present duty on Finished in Russia is not higher than the Pig Iron duty will be after March. These shipments will continue in the interval. Sheets are also in good demand in Upper Silesia. While this is the case, Rhenish Westphalia has become rather steadier, both in Pig and Finished. Metals.—Our market has been devoid of animation. We quote in marks, \$\frac{1}{2}\$ 100 \$\theta\$, German Lead, 11.75 \$\frac{1}{2}\$ 12; Lake Copper, 67; Tin, \$\frac{1}{2}\$ 9,4, and Spelter, 14.72 \$\frac{1}{2}\$ 15.—Borsenhalte. Ptlm. gals. ..4000 890 Constantinople Ptlm., gals.678,660 60,629 Forges, cs.... 8 84 Pumps, pkgs.. 8 168

| Mg. inp., pkgs | 6 | 45 | Mg. inp., pkgs | 5 | 45 | Mdw., pkgs | 13 | Mg. inp., pkgs | 14 | Mg. inp., pkgs | 15 | Mg. inp., 135 1,883 113 20 126

Madrid, September 22, 1884.—Metals.—The Government has just published statistics of export for the first six months, containing the following

	Hdw., pkgs 482 6,8	6 Incines.		
			1883.	1884.
ı			Tons.	Tons.
	Sew. ma., cs 87 1,55	Lead ore 8,245	6,874	
	Ag.imp., pkgs 23 48			8,721
	Pumps 2 51	6 Calamine	20,762	19,463
	Firearms, cs. 66 12,07	Copper ore 314,482	307,414	325, 325
		Iron ore2,055,958	2,181,197	2,243,311
	Clocks, cs 18 38	O I Turnet company	10,877	7,830
	Brass gds., cs 4			
	Copper, cs 2 7	6 Quicksilver 1,021	446	1,168
	Propel, wheel, 1 4	0 Lead 59,518	61,863	61,177
			2,589,433	2,666,995
	Boiler 1 54	Description Minage	raturnal sons	whomphann
	Lead, case 1	HOLLAND.		
	Q'ksilver, fiks 25 8	5 HOLLAND.		
	Still 1 30	D Contombon 10 100	4 1000 - 1	T10
			4Tin-	The mar-
	Nails, cs 17 27		s continu	ed inact-
	Liabon.	ive and weak at 49 guilders W	50 kg. for	Billiton.

ROTTERDAM, September 19, 1884.—Tin—The market here and at Amsterdam has continued inactive and weak at 49 guilders § 50 kg. for Billiton, spot; 49.25 to arrive, and Banca, spot, nominal at 59.75 @ 51.—Koch & Vlierboom.

### AUSTRIA.

Copper, casks 180 29,250
Ore, pkgs. ... 4 400
Pumps, pkgs. 3 900
Spanish Possessions
in Africa.
Hdw., cs. ... 4 130
Cutlery, case. 1 18
Mf. iron, pkgs 15 375
Scales. bxs. ... 3 125
Clocks, pkgs. 3 145
Steel pens, case 1 11
Alexandria.
Ptlm., gals.185,230 19,885
Vigo.
Ptlm., gals.288,300 27,135
Fenevuela.
Sugar mill ... 1 400
Hdw., pkgs. ... 50
Hdw., pkgs. ... 685
Mf. iron, pkgs. 31 1,400
Guba.
Sugar mill ... 1 400
Hdw., pkgs. ... 685
Mf. iron, pkgs. 31 1,400
Saws, case. ... 1 15
Locom.mil., pgs14 97
Scales, cs. ... 2 9
Mach'y pkgs. ... 150
Scales, cs. ... 2 9
Mach'y pkgs. ... 150
Nails, case. ... 1 18
Seev. mch., cs. 57
Wire cloth, cs. 3 218
Selem ps. 234
Nails, case. ... 1 80
Cutlery, c. ... 2 180
Cutlery, cs. ... 1 80
Buckles, cso. ... 1 140
Scales, cs. ... 2 9
Mach'y pkgs. ... 150
Nails, case. ... 1 80
Cutlery, cs. ... 2 18
Locom.mil., pgs14
Scales, cs. ... 2 9
Mach'y pkgs. ... 150
Nails, case. ... 1 80
Cutlery, cs. ... 2 18
Mach'y, pkgs. ... 150
Nails, case. ... 1 80
Cutlery, cs. ... 2 18
Mg. imp., pkgs. 4 81
Nails, case. ... 1 80
Cutlery, cs. ... 2 18
Mg. imp., pkgs. 4 81
Nails, case. ... 1 80
Cutlery, cs. ... 2 81
Nails, case. ... 1 80
Cutlery, cs. ... 2 81
Nails, case. ... 1 80
Cutlery, cs. ... 2 81
Mg. imp., pkgs. 80
Nails, kegs. ... 29
Mach'y pkgs. ... 150
Nails, kegs. ... 29
Nails, kegs. ... 29
Tin, bxs. ... 15
Nails, kegs. ... 29
Tin, bxs. ... 15
Tin, cs. ... 10
Tin, bdls. ... 14

Valparaiso, August 4, 1884.—Copper.—At first depressed, in response to a fresh decline in England, the market has finally recovered, leading to sales of 24,300 quintals at \$17.25, equal to £55.10/. Netrate.—Favorable cablegrams from abroad have started a speculative movement, and an advance of 20¢ ½ quintal, to ½25.95 %, at which \$35,500 quintals changed hands, most of it from second hands, stock in first hands being nearly exhausted. Nitrate works have suspended operations for a few weeks, in order to take stock and prepare for a control of output theneeforward. There were shipped to Europe in July 47,500 tons, and to the United States 670). There were loading on the lat inst. 44,500 tons for Europe and 1500 for the United States. Fortnight's charters for Europe, 22,000 tons. Coal is quiet, since no Nitrate is made, the quotations being 30/ @ 32/. Exchange, 90 days, 31½d.—Weber & Co. VALPARAISO, August 4, 1884.—Copper.—At first depressed, in response to a fresh decline in England

PENANG, August 9, 1884.—Tin.—Fortnight's receipts have been 9000 piculs, and a fair business has been done. The market opened at \$25.40, and with few fluctuations remained firm, finally closing at \$25.58 upon better cable advices and an improved inquiry. Sales sum up 9500 piculs, Europeans taking 7300 and Chinese 2000. Exchange, four months' bank, 3/9.—Schmidt, Kustermann & Co.

Canada Puts Shovel Steel on the Free List.—A dispatch from Ottawa, Can-ada, dated October 4, states that an order in Council has been passed allowing steel for shovels and spades of not less than 11 or more than 18 wire gauge, and costing not less than \$75 per ton of 2240 pounds, to be imported free of duty by manufacturers of shovels and spades for the purpose of manufacture, until the next session of Parliament.

John C. Ellis, of the Schenectady Loco motive Works, Schenectady, N. Y., died suddenly on the 4th inst. He represented Schenectady County in the Assembly of 1866, and was a heavy stockholder and ex-presi-dent of the Schenectady Locomotive Works Company, in which his brothers Charles G., Edward and William are the principal stockholders.

## Trade Report.

#### General Hardware.

Trade continues quiet, without special features other than those to which we have heretofore directed the attention of our readers. Most of the goods that are sold are sold by travelers who are carefully working their territory and securing a good many small orders. Prices have not materially changed since our last report, the market remaining in buyers' favor. Nearly all leading goods are used more or less as leaders, and careful buyers will find it to their advantage to look for close figures. We hear some complaint as to collections, but considering the condition of the market 1/4 inch they may in general be pronounced fair.

#### BARB WIRE.

Very little movement is reported in this line, though some good-sized orders have been entered. Most buyers seem disposed to hold off for the present. The action of the manufacturers, to which we referred in our last report, looking to the formation of a syndicate, has not yet taken definite shape. A meeting was held in Chicago last week, at which it is understood a plan was proposed which promises to be very satisfactory if it is carried out. The details are not in such shape that they can be published, but it is likely that a syndicate may be formed to control production and prices somewhat after the fashion of the Tack combination and, similar trade organizations. Another meeting of the manufacturers will be held this week in Chicago, and an effort will then probably be made to secure the co-operation of all the firms and companies engaged in the business. Prices are said to be a little firmer, which may be owing to the prospective syndicate, but outside of this cause there is no other reason for a change from previous conditions. We continue to quote local prices on the basis of 5% cents to 5% cents for Galvanized Four-Point, according to quantity, Painted being I cent per pound Wm. Blair & Co., of Chicago, quote Galvanized Two and Four Point Barb Wire at 514 cents to all classes of buyers, and quote Painted Wire at 414 cents. This is licensed Wire. The Wells & Nellegar Company, of the same city, we are advised, make the same quotations. Grind Stones, per ton...

#### NAILS.

As usual at this season of the year, the demand for Nails is very good, and most of following quotations on his line of Chisels, the dealers in this city report their stocks Gouges, Drawing Knives, &c. He directs running quite low. In fact, in some cases attention to the fact that the Socket Firmer it is impossible to fill orders as rapidly as Chisels are furnished with apple-wood they are received. Large orders are coming handles: in from localities depending on canal and river navigation, in anticipation of the approach of winter. This causes decided girmness in the views of the representatives of the leading Eastern Nail manufacturers, and some of them speak very decidedly of better prices. There still continue to be occasional sales of Nails by other parties at low prices in carload lots, but it is claimed that such Nails do not rank as high in the estimation of local buyers as the older and better-known brands. However this may be there seems to be no difficulty among wha may be called the regular trade here to sus tain prices at the rates given last week, which are from \$2.15 to \$2.25 for ordinary deliveries from store. Concessions from these figures are sometimes made for large quantities, but not so frequently as was the case two or three weeks ago.

#### MISCELLANEOUS PRICES

The following changes in the Shoe Finders' list were adopted by the Tack manufacturers on the 1st inst., the list on other lines being unchanged:

Iron Shoe Nails, 4-8 inch and longer, cents per pound. Iron Shoe Nails, 4-8 inch, 314-8 inch and shorter, 

We learn that the Wells & Nellegar Company, of Chicago, issued a price list September 29, in which, among other goods, they quote Screws, discount 50 and 50 and 5; Car- the name of the corporation, worked out in riage Bolts, discount 50 and 50 and 5; Disston's Files, discount 60; Barb Wire, Two-

Point, 41/4 to 51/4 cents. The Manhattan Hardware Company, Reading, Pa., have issued, under date of October I, a sheet of prices in which they give net figures for their whole line of goods.

Screws are fairly firm at discount 75 per cent., but the goods of some of the new concerns can figures. The jobbers also are to some extent shading nominal prices on the goods of the leading companies. Files may be quoted discount 50 and 10 to 60, but the latter figure can be readily obtained and in special seen the trade-mark, "Keen Kutter." At cases shaded. Cartridges are held, nominally, at the printed price discount 50 and 10, but are freely sold at discount 60 per cent. Carriage Bolts are unsettled. The price of of Compasses and Brass Chain, Locks continues somewhat irregular, being, are large Flower Vases, decorated with Pearl nominally, discount 60 per cent., but better and Ivory-Handled Pocket Cutlery, Fine figures are obtained by good buyers. In Scissors, Crochet Needles, Coffin Escutchsome cases net prices are made, the list and

discount being dispensed with. the Miller Lock Company, Philadelphia, and

the expense of boxing. The list is su	bject
to a discount to the trade of 331/3 per of	ent :
Sunk Handles, IXX Tin, Boxed for Shipm	ent.
No. 91, 12 x 8 x 51/4 inches	Each \$4.95
No. 92, 1016 x 7 x 416 inches 55.56	4.68
No. 93, 9 x 6 x 334 inches 51.16	4.26

strong and well finished.	
Sunk Handles, Boxed for Shipment	
Per doz. 13-inch—13 x 834 x 6 inches	85.86 5.69
15 inch—15 x 1034 x 634 inches 72.60 16-inch—16 x 1134 x 7 inches 77.00	6.03
18-inch—18 x 18 x 8½ inches 88.00 Medium or Standard Weight Boxes, IX T Sunk Handles, Well Finished, Boxed	

Shipment.	
Per doz.  No. 51, 12 x 8 x 514 inches \$85.00  No. 52, 1016 x 7 x 414 inches 51.70  No. 59, 9 x 6 x 394 inches 47.30  8-inch, 8 x 594 x 314 inches 44.00  7 inch, 7 x 414 x 31 inches 42.90	Each. \$4.58 4.31 8.86 8.66 8.57
Outside length and width of all Boxes, inch larger than above measures. Knobs	

Inside Trays, for above Boxes, Boxed for

Shipment.
Inside Trays are sold separate from the Boxes, to avoid carrying two stocks of Boxes with Trays

Bug	W	unout.									
No	1	for all	19.inc	h Roya						Per doz. \$9.86	Each. \$0.78
No.	9	66	10	H DOZO							. 06
	8,		9	6.6						5.50	.46
No.	18,	66	18	66						16.50	1.87
No.	14.	66	14	0.6						90.90	1.74
No.			15	64					. 0	22.00	1.83
No.			16	6.0						26.40	2.20
No.	18,	46	18	66		0	0			83.00	2.90
A	a	indian	ting 6	louvea		÷	1	ok	J.	ich mod	0.000

printed and published by the jobbers, extract from the last circular of one of the leading Chicago houses the following prices, which are significant mainly in the fact that

•	they were sent, as we are advised, to the
5	very smallest trade as well as to the regula
l	retail houses in that section:
	Barbed Wire, licensed, Two and Four Point, Painted, per pound
ı	Galvanized, per pound
	Blind Hinges, Clark's, for wood, per case, 6
L	doz
ľ	Loose-Pin Cast Butts, Clark's
	Strap and T Hingesdis., 70
1	Screw and Strap Hinges, 14 inches and up-
	Screw and Strap Hinges, 12 inches and less
	Screw and Strap Hinges, 12 inches and less, and upward, per 100 pounds
ı	Screws, Steeldis., 75 Wrenches, Cast Agriculturaldis., 75&10
	" Wrought " Heavydis., 75
	Wringers Novelty and Universal, per dog \$27.6
	Eureka, Iron Frames, 27.0  Axes, Hunt's, Douglas Axe Company, 7.0
	Carriage Bolts, Lamson, Sessions & Codis., 75
	Ground Stove Hollow-waredis., 60
1	Porcelain Enamel Waredis., 60&10
ı	Ames' Shovels, Spades and Scoopsdis., 17% Chisholm's dis., 33% Disston Hand, Panel and Rip Sawsdis., 30£10
	Disston Hand, Panel and Rip Sawsdis., 20&10
	Granite Iron Ware
1	Tinners' Trimmings die 65.65

GEORGE B. CURTISS, 95 Chambers street, New York, makes the

				Dis. per cent
Extra	Socket	Firmer	Chisels,	Apple-Wood
Han	dles			75&
extra	Socket Fr	raming C	hisels	
6.6	" Cc	orner	66	75&
66	Razor-Bl	ade Draw	ing Knive	8
86	Oval Blac	le Carpen	ter's Draw	ing Knives 75&
6.5	Farmer's	Drawing	Knives	
6-8	Shingle I	rawing	Cnives	
86				ives 75&
.64				ves75&
66	Carpente	r's Slick	de controlly de total	
69	Socket F	raming N	illiweight's	Chisels75&
84	Farmer's	Sookat I	raming C	hisels6
8.5	Gooket W	iumor Da	ring Chao	ls40 ne
	BUCKEL F	ti tio	ring Cuise	10 40 пе
9.5	8.6	44 De	uges	
64	fform Win	PB Chiu	ring Gong	es40 ne
66	Tang Fir	mer Chis	ets	
54		I UK E	ung Chise	is
54		Group	es	
8-0	110	10 7 7 2 2 2 2 2	timer (Longous	an Ma

HARDWARE EXHIBITS AT THE ST. LOUIS EX-POSITION.

Probably the most attractive display of Hardware ever made at a fair, and one which eclipses anything seen at the Centennial, is that of the Simmons Hardware Company, at the St. Louis Exposition. It merits a careful description, being in every way unique. It occupies a wall space 101 feet long by 28 feet high, or 2525 square feet. The general design is a frame of three immense panels, supported at the ends by columns representing windmills. The beveling of the frame is ornamented with Hor in each of which is the Bowl of a Silver Spoon, representing the frog of a horse's foot. Surmounting the frame is a heavy cornice in black and red velvet, decorated with Spoons. Knives, Forks, Chisels and Coffin Studs, while beneath the cornice is a panel bearing Bronze Door Hinges. Immediately beneath is the main or middle panel, 30 feet long and 15 feet high. The central figure of this is a Maltese Cross, 10 feet square, with wings made of 188 glistening Axes and a center of Ivory-Handled Revolvers and Daggers, on a purple ground. To the right and left of the Maltese Cross, Circular Saws of 5 feet diameter revolve in opposite directions; above be obtained at better the Saws two eagles spread their wings with plumage made entirely of Plated Knives and Spoons, bearing in their talons a Keen Kutter" Axe. Between the eagles-

in letters formed of Bright Hardware-is either end of this panel are representations of palmetto trees, the brown trunks made of Drawer Pulls and Curtain Pulleys, the leaves

eons, Studs and a variety of Small Hardware. The side panels have a central revolving The following is the price list of the Cash figure representing a "Sunburst"-the cen or Deed Boxes, which are made with a Self- ter being a Circular Saw surrounded by Locking Combination "Champion" Lock by Plated Knives and Chisels, and these latter by large rays composed of 48 Panel Saws.

t | Scissors, Cupboard Catches, Chain Dog Col- | tion than ever. They expect to continue as | ther in regard to this matter. Our correslars and Coffin Studs, the filling of the corners of all the panels being composed of trade, and are hoping to have the continued to the conti Chisels, Augers and Broad Axes.

Separating the three panels are figures representing Corinthian columns and African storks, the columns being in blue velvet, decorated with a choice variety of Solid Bronze Builders' Hardware. The storks are about 5 feet high, and fashioned entirely of Hardware stock; the beak of the bird is made of Keyhole Saws; the head is a pair of Calipers; the eye, a Coffin Tack; the neck, a row of Compasses; the plumage is made of small Spoons, Silver Measuring Tapes and Plated Knives and Nut Picks; the legs consist of Ivory-Handled Pen Knives, while the feet are made of Nut Picks.

The windmills are 25 feet high, with towers of octagon shape, the sides covered with fanciful designs worked in Auger Bits, Chisels, Trowels, Saws, Sickles, Corn Knives, Bowie Knives and other brightly polished goods. The fans or sails are 13 feet long, and decorated with Plated Spoons closely placed. The mill towers rest upon pagodas 8 feet high—the sides decorated with Silver-Plated Scissors, Nut Cracks and Bronze Hinges, the frieze and cornice being fashioned of Grass Hooks and Rules. Showcases containing the finest and costliest Cutlery in Pearl and Ivory are exhibited within the pagodas. The motion for the large Saws, sunburst, windmills, &c., is communicated by means of the two small engines seen in the foreground-the manufacture of the pupils of the Manual Training School.

There are used in the decoration of this display, exclusive of the fine goods shown in the cases under the windmills, 6043 pieces of Hardware. These are as follows:

Axes, Broad	16	Knobs, Door
Axes, Chopping	180	Knobs, Shutter 4
Bits, Augur	294	Locks, Pad 7
Blades, Saw	4	Lines, Tape 9
Chisels	262	Nut Crackers 10
Calipers	216	Nut Picks 8
Cupboard Catches	14	Pulls, Drawer 10
Collars, Dog	26	Pulleys, Curtains 15
Compasses	96	Plates, Finger
Daggers	8	Roses, Door 9
Escutcheons	118	Razors 10
Hinges, Door	212	Rules 4
Hinges, Shutter	182	Spoons, Tea177
Hatchets	46	" Table 450
Handles, Coffin	18	" Salt 3
Hooks, Brass	20	** Coffee 4
Knives, Table	305	Saws, Hand 50
Bowie	20	" Keyhole 6
" Pocket	199	" Circular 7
" Fruit	10	Shoes, Horse, 48
	32	Scissors 27
Corn		Consideration of the contract
" Butter	18	Trowels

Immediately opposite, on the other side of the building, is the display of the A. F. Shapleigh & Cantwell Hardware Company. This is also very fine, showing much ingenuity and taste. It consists of an immense panel of black velvet inclosed with mirrors beveled inward, like a picture frame, and supported by substantial columns at either end. Upon the panel which must be 20 x 30 feet square, is displayed a fine collection of Axes, Hatchets, Hand Saws and other small Tools. The "Diamond Edge" trade-mark D. E. is made to do decorative duty on the columns. Within the inclosure in part of the wall display are two mechanical gems of the mitrailleuse type. These two are the only Hardware exhibits on the main floor.

In the basement are found several exhibits. The Duggan-Parker Hardware Company make an attractive display of specialties, mostly Light Gray and Malleable Iron Castings, displayed attractively on a large wall panel.

The Iowa Farming Tool Company, of Fort Madison, show in cases and otherwise a fine collection of Tools, especially for farm

The Groom Shovel Company show a large variety of Shovels of good construction and

The Novelty Tool Company, of Pittsburgh,

exhibit the Universal Miners' Pick. The N O. Nelson Manufacturing Company exhibit a fine collection of Barry's English Steel Saws, and James Ohlen's Chisel-Tooth and Champion Saws, also a complete Saw Mill Plant, Mill Supplies,

and small Saws, the large Circular Saws re- facturing Company, St. Louis, Mo., is also no stiffening in prices, but that quotations volving. They also exhibit Logging Tools at hand. It covers a line of Fire Iron are freely cut, until in many lines the market and some interesting machinery.

F. Armstrong, Bridgeport, Conn., exhibits Adjustable Stocks and Dies, Propellers Flower Brackets, &c. The company men-

and Bolts The L. M. Rumsey Manufacturing Company show a fine collection of Pipe-fitters' and Machinists' Tools, Hammers, Wrenches,

Drills, Revolution Indicators, &c. Park Brothers & Co. show samples of Steel and Tools made therefrom, and a Plate for a Circular Saw 113 inches in diameter, 11 thick, and weighing 2000 pounds. This s said to be the largest Saw Plate ever rolled.

Mast, Foos & Co., Springfield, Ill., exhibit Buckeye" Lawn Mowers, large and small, Corn Shellers, and a variety of Ornamental Ironwork.

Replay & Kemball, St. Louis, make a fine display of Machinists' Tools, Steam Fittings, Valves, Guages, &c.

There is also a fine collection of Fairbanks and Howe Scales of all kinds and sizes. and a variety of Agricultural and other describe. The mechanical department surpasses that of any local exhibition we have ever seen, and will repay the most careful examination in every part.

#### ITEMS.

patronage of their customers.

The Alford & Berkele Company, No 77 Chambers street, New York, on page 31 advertise Allard's Patent Spiral Screw Driver, giving an illustration of the article and a brief description. This Screw Driver, it will be perceived, is designed more especially for light and rapid work, and for the use of those mechanics who have large quantities of small screws to drive.

In our report of the proceedings of the Hoe and Fork Makers' Union, which was published in the Trade Report, August 21, by a typographical error the cash discount was stated to be 20 per cent, instead of 2 per cent. This was undoubtedly recognized by the trade generally as an error, but we learn that one of our subscribers in Germany was perplexed by the quotation, and called the attention of one of the manufacturers of this line of goods to it. That foreign dealers who are not entirely familiar with our system of discounts may not be misled by it, we make this correction.

#### BATES, WILSON & CO.

As appears by the notices herewith given, the firm of Tennis & Wilson has been dissolved, Bates, Wilson & Co. succeeding.

New York, October 1, 1884. Notice is hereby given that the copartner ship lately subsisting between Frank F Tennis and W. Kumbel Wilson, under the firm name of Tennis & Wilson, was on the 1st day of October, 1884, dissolved by mutual consent. All debts owing to the said copartnership are to be received by said W. Kumbel Wilson, who continues the business as heretofore at 294 Broadway, in the City of New York, who is authorized to settle all debts due to and by the firm.
FRANK F. TENNIS,

W. KUMBEL WILSON.

NEW YORK, October 2, 1884.

The undersigned hereby respectfully inform you that they have formed a copart-nership under the firm name of Bates, Wilson & Co., for the transaction of the Hard-ware commission business, at 294 Broadway, the premises formerly occupied by Tennis & Wilson, to whose business they succeed. They will highly esteem the favor of your

EMORY L. BATES. W. KUMBEL WILSON. THOMAS C. VAN HOESEN.

It will interest our readers to know that Emory L. Bates, the senior member of the new house, is president of the Snell Manufacturing Company, and that Thomas C. Van Hoesen, who now resumes his direct connection with the New York trade, was formerly a member of the old house of Clark, Wilson & Co., and is well known to many of our readers. Bates, Wilson & Co. intend to carry on the Hardware commission business as before, adding to the lines of goods which they handle those of several other leading manufacturers. Financially strong and with much experience in the Hardware business. they engage in this enterprise under favorable auspices, and will receive the best wishes of the trade for their success. They have made arrangements with Thomas Forsyth of the Flagler, Forsyth & Pierson Manufacturing Company, by which he will succeed Duncan K. Major as their representative direct in the Western and Southwestern States for the sale of the goods made by the Snell Manufacturing Company.

#### NEW CATALOGUES.

The fall catalogue of the Bindley Hardware Company, Pittsburgh, Pa., was duly received, showing an attractive line of such asonable goods as Coal Vases, Japanned Coal Boxes, Japanned Helmet Coal Hods, the common Coal Hods and a line of Fenders, Shovels, Pokers, Fire Irons, Fire Iron Stands, &c. It illustrates, with prices, Lanterns, Coffee Mills, Wringers, Meat Cutters and a variety of articles for household use.

The illustrated catalogue of House-Furhing Hardware manufactured and for Custer & Co. make a fine display of large | sale by the Duggan-Parker Hardware Manu- | ket are uniformly to the effect that there is &c., with a variety of Bird-Cage Hooks, tion in their preface that they have labored for several years to improve the quality and finish of all their goods, and invite the closest inspection of every article they manufacture, calling attention especially to their line of Berlin Bronze Goods.

The Withington & Cooley Manufacturing Company, Jackson, Mich., and the Iowa Farming Tool Company, Fort Madison, Iowa, have issued their catalogues for the coming year, attractively exhibiting the line of Farming and Garden Tools of which they are the manufacturers. To any special features in these lists, or any new goods that they may contain, we will direct the attention of our readers at a later date.

#### THE ARRANGEMENT OF HARDWARE STORES.

few weeks ago in these columns with reference to the best methods of arranging Hard-Machinery which we cannot undertake to ware stores so as to secure the requisite convenience, and at the same time display goods in a tasty and effective manner, we have received the following communication, which we take pleasure in laying before our readers. It is specific, practical and to We have the pleasure of learning from the point, and doubtless will be suggestive the St. Louis Malleable Iron Company, St. to our readers, some of whom may be disthe St. Louis Malleable Iron Company, St. to our readers, some of whom may be discent. on the first and 7½ per cent. on Louis, Mo., that they resumed business on posed to add further particulars or to latter. The trouble is too many leaders. which are described among our Hardware Beneath these revolving figures are seen the 7th inst., having paid up all claims in describe their own methods of arranging few years ago it was Nails only. Novelties on page 33. The prices include Egyptian Vases made of Cutlery, Salt Spoons, full and being now on a more solid foundation.

To the Editor of The Iron Age: I will gledly give my idea about arranging shelv-ing in Hardware store in answer to "Hardware Man," in your issue of the 2d inst. If I were arranging shelving, they would be deep enough to take a Socket Framing Chisel box in end ways, or 20 inches. I should have the boxes 7 inches wide over all, and 6 inches high over all. Have the sides of boxes 3/4-inch stuff. Cover front with green paper, and, when practicable, sample the article out-ide. When the article is too large to sample, paste cut in its place. No one who has not tried it knows the vast one who has not tried it knows the vast amount of room and vexation saved by deep boxes. A man by the name of Green (I think) advertises in *The Iron Age*, who makes sample boxes a speciality. I should have the shelves 12 or 15 inches high, having the second the ledge, and also on the two top rows, twice as wide as others, for light, bulky goods. Moslow Bross of Fact Savinew. goods. Morley Bros., of East Saginaw, Mich., have an excellent ladder, running on track, which can be used to advantage. The cornice on top of shelving should be as little projected as will look well. Do not have wide, upright divisions between the shelves, but the same thickness as shelving. If Tin-ware is carried the shelving should be wide enough to take the largest size Dish or Rinsing Pan kept in stock, with sliding glass doors, running on some good sheave. These ideas can be modified to suit location and stock, but for general Hardware they will be found advantageous. There are hundreds of minor details that will present themselves in arranging special lines of goods, as Files, Saws, Hammers, Hatchets, Pocket Cutlery, &c., in which great ingenuity can be displayed and valuable suggestions received by seeing how other people arrange the same things, and improving on their mode of doing. Good light is very essential, even in showing off a be found advantageous. There are hundreds proving on their mode of doing. Good light is very essential, even in showing off a well-arranged stock, and cleanliness is indispensable in all cases. Do not let the same goods remain in the show windows for months, with an accumulation of flies and dust, but change often, so as to attract people that pass and repass every day. Many a nimble sixpence is turned by people seeing "just what they want" in some window. A large amount of painstaking will be amply repaid in this direction by direct trade as the results. trade as the results. KNARF.

But as giving views which differ somewhat from those expressed in the above letter, the following communication, which has just ome to hand from a traveling salesman, will be of interest

To the Editor of The Iron Age.—The communication regarding the arrangement of Hardware stores came duly to my notice. Although I am in the Hardware trade only as a traveling salesman, I have many opportunities of studying the arrangement of Hardware stock. I find the most convenient method, and that in most general use throughout the West, to be as follows: Shelving should be 12 inches deep in all cases; boxes from 4 to 6 inch front, which cases; boxes from 4 to 6 inch front, which in sampling long articles, such as Screw Drivers, Chisels, &c., will readily contain a half dozen of each, as goods of that sort are usually packed in half-dozen quantities; and in making the boxes 6 x 12 you can either use them lengthwise or with the long side out, which saves the expense of making boxes for each article and of different sizes. The hight of your ledge can be from 26 to 40 inches, according to taste. from 36 to 40 inches, according to taste, and 36 inches depth, giving 24 inches in the clear for drawers. Shelving can be 5 feet high from ledge, which is not out of the reach of salesmen, who can readily reach the top shelf without the use of a ladder. In making the ledge this size you can have drawers in it from 8 to 10 inches high, and beneath the drawers room for cupboards for bulky articles, which, with doors, are very convenient, keeping out dust,

But here we refer the matter to our readers, from whom we shall hope to hear. There are many other points concerning the arrangement of Hardware stock which have not yet been touched.

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#### THE CUTTING OF PRICES.

This question still continues to attract much attention in all branches of the trade. We have received several communications from manufacturers and their customers. The indications as to the course of the mar-Stands, Dog Irons, Tongs, Pokers, Shovels, is demoralized. As illustrating the present condition, the following letter from a prominent Western house will be of interest :

To the Editor of The Iron Age .the market now is, there seems to be no bottom on anything, a condition of things brought about, in my opinion, mostly by the large jobbers making very low prices as leaders; and, secondly, by their making prices at cost or even lower on goods that a customer has already bought. To illustrate: Early this week I was called upon by the representative of one of the largest jobbing houses in the country. I told him that we needed no goods, as we buy nearly everything direct, except to piece out. He then wintly integrities of our selections. quietly interviewed one of our salesmen and found out that our order had been placed for —, and then called my attention to the line, and quoted discount — per cent. de-livered (a very low figure). Now either — In reply to the inquiries which appeared a sew weeks ago in these columns with referustomers sick if they find they have been buying goods of either manufacturers or of other jobbers. The remedy, in my opinion, can only be by the manufacturers selling all jobbers at an equal price. It is evident that 

The communication which we print below is from a well-known and long-established New England manufacturer. The trade will read with interest the views which he presents as to certain causes of the unsettled condition of prices as they are constantly operating, and will also give to his suggestion-that there be a conference or congress of manufacturers to consider measures to prices. lessen existing difficulties and prevent things remaining wild-the weight to which it is entitled

To the Editor of the Iron Age: Probably there is no paper published that I read with more care and interest than The Iron Age Have been quite interested in the letters and comments in regard to the cutting of prices. I have been in business about 46 years, continuously in the same business. During this time we have passed through very many periods of depression—some longer and some shorter. Always during a depression prices shorter. Always during a depression prices will settle, and the cutting many times is fearful. Is there any help for it? This is the important question. Under the present system of doing business I must confess I see none. I know of no law to prevent a man or men (sane) buying goods or starting a manufactory from peddling out his money till it is all gone. As a rule, men start business with too small capital, depending on borrowing money. When times are good there is no trouble; but when business is dull and depressed and continues about five years, then comes cutting. Most men in business have bills payable coming due, and they will sacrifice on their goods to meet them. All manufacturers know that there are parties in trade in many of our large places who always have large means at their command and are ready for just such cases. They will always buy when they know the price is under the market. It is impossible for some to keep out of their clutches. This cuts the price, and others must follow or lose trade. must follow or lose trade.

Bank men have wonderful wisdom. They call a man good when he pays his notes, no matter if the man sells goods at 50 per cent. less than they cost to do it. With them he is all right and his credit good at the bank. If the man has property \$10 to \$1 and don't pay, with so-called sharp bankers he has no credit. Hence failures. The time was in the early part of our business life a much longer credit was given than since the war. Nothing less than six months, and at the South one year, was common. Whether the present generation are wiser than those of 30 years ago, I won't under-take to say. The years that manufacturers make money are few compared with those they just hold their own or lose money. One of the most serious things we have had to contend with in our business life is new particular than the ties starting in business, who have some money, but no experience. It takes about five years for such parties to find out that they are losing money. Perhaps by that time their money is all gone. They have been kept going by cutting under those who have been longer in the business. If the party happens to have any money left, and concludes to go on in the business, he does so with some knowledge of what it cost to make goods. But about this time another starts up and goes through the same operation. Now, can there be any way devised to lessen all these difficulties, and to prevent in a measure things "running wild." All manufacturers in every line have some things in common. Other interests have a national interest, and have their national congress or convention. The manufacturing business of this country is of large importance. It would seem that the combined wisdom of representive men in all lines of goods manufactured might conceive of some way to lessen the difficulties for which at present there seem to be no help. I throw out this suggestion for thought.

The next letter is from a merchant who finds that the root of the trouble is in the methods which the manufacturers adopt in marketing their goods, specifying the prac tice of giving to large jobbers a very wide margin, and suggesting, as several of our other correspondents have done, that there be a difference of only 10 per cent. between the prices to the large and the small trade. It will be perceived, also, that his suggestion is that both prices be published openly, so that all would know just what the real prices are. Our correspondent also alludes, it will be observed, to the practice of some manufacturers selling to the merchant's cus tomers at about the same figures that are given to him. But we give the whole letter for the perusal of our readers :

To the Editor of The Iron Age: I have read with interest your comments and various ideas of others with regard to cutting prices, and find the same complaint all over the country. I confess I am unable to see any way out of the difficulty, but wish something might be done to remedy the evil. My experience of more than 20 years convinced me nearly or all the trouble lies with the manufacturers, and if they would consent to do so, could remedy the evil, if not entirely blot it out. Let them say to all parties, our prices are (whatever they see fit to put on their goods), and no deviation in any instance up to a very large amount, and then only, say, a difference of 10 per cent, and let price and discount be published openly, so any and all could know just what goods were worth or could be bought for cash. In that way it seems to me there would be none of this side talk of 5 or 10 per cent. better, and the middlemen would be done away with. These are only my views, for which I charge nothing. One source of annoyance to the retailer more especially is, trade becomes retailer more especially is, trade becomes dull, customers are slow to buy, and the par-ties for whom he may be selling a certain line of goods think he is not doing as much as he might, and the manufacturer himself goes directly to his agent's customers and supplies the same goods at the same price the supplies the same goods at the same price such dealer has been paying for them. In other words, the manufacturer appoints his agents in certain localities and supplies them with what stock they may need, and after a little slyly goes directly to his agent's customers with same goods and prices. Since this last

three such cases, and I cannot believe I am \$1 cheaper. In this market No. 2 X Founthe only one who has been thus favored. In the face of such facts how can prices be maintained? Manufacturers of that kind should receive the very ample supply.

Scatch Pig.—The arrivals of the week should receive the scorn and contempt from every business man which they richly deserve. Until manufacturers maintain prices and protect the dealer we shall never see our way clear to stop this practice of cutting

The following letter touches a point to which little, if any, reference has been made in this discussion, and suggests the old question as to what constitutes a jobber, entitling him to the jobber's discount:

To the Editor of The Iron Age: I have een reading considerable about cutting prices, but your correspondents do not ap pear to get at the bottom yet. The very worst feature of business is the practice of giving special discounts, or jobbers' discounts, on small lots of almost all shelf goods. It has got so that a wholesale house with one man on the road can get jobbers' priose and almost are road can get jobbers' prices, and almost every town in this section with a population of 3000 inhabitants, and some even smaller, have one or two "wholesale houses," although most of them say they cannot do more in that way than pay expenses. I have asked several of them why they tried to wholesale if they cannot make it pay. Their answer is that they have the advantage in the retail trade, which means that if they cannot make their expenses on the road they can sell for less at retail than the retailer. the retailer. Some openly brag about their advantage in this way, and say they can and will retail their goods for less money than those who are not doing a wholesale business. All the "small town wholesalers" make a regular business of retailing, and would not try to wholeof retailing, and would not try to wholesale if it was not for getting advantage
of other retailers, and they cut and slash
and try to run everybody else out. It
does not take a very smart salesman on
the road to sell \$500 worth of Locks, one
carload of Nails or Glass, and almost any
other line of goods, thus enabling them to
out jobbers' rates. I think this is get jobbers' rates. I think this is the greatest cause of cutting, as the heavy discounts on such small lots would drive out the retailer dealer in the town where they have a "wholesale" and retail Hardware house. a "wholesale" and retail Hardware house. A jobber ought to attend to the jobbing trade and let retailing alone Extra discounts should be for lots large enough to cut off these retail houses that sell so few goods at wholesale, who have only one or two men on the road, peddling among country dry-goods stores and corner groceries, where they keep a line of everything. The manufacturers cannot, in my opinion, stop the cutting as long as this kind of wholesaling goes on, and yet nearly all that have written on this subyet nearly all that have written on this subject find fault with the jobbers or manufac-turers, and say nothing about the "country jobbers" who are trying to cut the retailers' throats, which is where the worst trouble

#### New York Iron Market.

In most lines there is a dearth of business. The number of transactions is exceedingly limited, and many merchants and agents are scarcely doing more than paying running expenses. Some of those who usually manage to obtain a fair amount of patronage report their inability to secure any orders whatever, their efforts to induce purchases being met with the response from every direction that buyers at present do not feel like laying in any stock. This is particularly the case with those who deal in crude material, such as Pig Iron, Old Rails, Scrap Iron, &c., the Manufactured-Iron trade showing somewhat better results. dullness in business seems to be intensified by the approach of the Presidential election, which is now undoubtedly exerting its greatest influence. Many persons believe that after the election is over trade will brighten somewhat, while others take a gloomy view of the situation and do not anticipate any greater movement in trade until next spring. The general impression prevails that the stagnation in business is now greater than it was in 1877 and 1878.

American Pig.-Orders continue to be very few, and small lots are the rule. Few ries are reported from consumers, the trade now being done consisting very largely of orders that are solicited. We continue to hear reports of inroads made by Western and Southern Pig Iron on the regular trade of the Eastern section of the country, wellinformed parties asserting that these outside Irons are now taking from one half to twothirds of the business in many New England cities and towns. Even in this vicinity the quantity of Southern and Western Irons used is quite considerable in proportion to the total quantity of Pig Iron consumed. Of course there are some Eastern companies whose product is regarded with so much favor that it is preferred by many foundrymen, but it is a question as to the strength of this sentiment if there is a wide difference in prices. Our monthly report of the number of furnaces in and out of blast shows a slight increase in production in the district contiguous to this city, which is due to more activity in the Lehigh Valley, other sections continuing to show a falling off. The following table exhibits the condition of the curtail production for a time, a movement furnaces in the territory referred to on the 1st of each month mentioned :

Pig Iron continue to be quoted as follows, now in for the winter. disturbance in prices I have experienced Forge, \$17 @ \$18. Outside brands, about @ \$30 at Eastern mills.

Scotch Pig .- The arrivals of the weekaggregated about 1200 tons, most of which had been sold to arrive. There is no change in the attitude of buyers, who still seem to be indifferent about laying in stocks. Prices are held about as reported last week, notwithstanding the fact that foreign advices represent makers' prices firmer, with an advancing tendency. It would be difficult to establish an advance here unless the price of American Pig Iron were to advance at the same time. We continue to quote as follows for small lots : Coltness, \$22 @ \$22.50 ; Gartsherrie, \$21 to arrive, \$22 from yard; Shotts, \$21.50 @ \$21.75 to arrive, \$22 from yard Langloan, \$21.50 to arrive, \$22 from yard Carnbroe, \$20.50 to arrive, \$21.25 from yard Glengarnock, \$20.50 to arrive: Summerlee \$21 to arrive; Dalmellington, \$20 to arrive; Eglinton, \$19.25 @ \$19.50 to arrive; Clyde, \$20 to arrive.

Bessemer Pig and Spiegeleisen. \$18.50 and \$19 for shipment, but business is completely stagnant, not even an inquiry being reported. In Spiegeleisen there is nothing new to report, 20 % being quoted at \$26.50 by some parties, though others are asking \$27.50.

Bar Iron .- A slightly increased move ment is reported under this head, quite a number of orders for mill lots having been placed. Prices continue to be demoralized, but it is asserted that the lowest rates named for Best Refined Bars apply to Irons made with a mixture of Old Rails or Scrap with Muck Bar. Store trade is perhaps a little more animated, the change over last month being in the direction of better business, though trade cannot yet be reported brisk. Quotations are about as follows: Best Refined, at mill, 1.7¢ @ 2¢: from store, 2¢ @ 2 2¢; Common Iron, at mill, 1.5¢ @ 1.7¢; from store, 1.9¢ @ 2¢.

Plates.-There is a better feeling noted. though business is not active in this

The demand for Iron line. Plates is still light, and even Steel Plates are not in as good request as has been the case for some time. Quotations range about as follows for small lots of Iron Plates: Common or Tank, 21/4 @ 2.3#; Refined, 21/2¢; Shell, 23/4; Flange, 33/4; Extra Flange, 4¢ @ 4¾¢. Quotations for Steel Plates are as follows: Tank, 334¢ @ 4¢; Boiler,

to best buyers.

Sheet Iren.-There is a good, fair demand not yet having come into the market for what may be called the second demand, which depends very considerably upon the weather. If cool weather were soon to set in, business would undoubtedly be better. Prices of Black Iron continue about as they have been reported, but Galvanized Sheets range as follows: "CHB," 521/2 % discount; Charcoal, 55 % discount; Refined, 57 1/2 % discount for small lots of a few bundles. Good-sized orders can be placed atcarload lots can be placed at about 5 % bet- pared with 22,632,749 tons for the same ter. Store prices will be found in our list of period last year. New York Wholesale Prices.

an order is placed for a fair-sized lot. Quotations for small lots are about as follows: American Tool Steel, 91/6; Tool Steel of special grades and finer quality, 12¢ @ 20¢; Crucible Machinery, 5¢ @ 6¢; Spring and Tire, 3¢ @ 3¼¢; Open-hearth Machinery, Bessemer Machinery, 3¢; 3# @ 31/4;

English Tool, 141/2 @ 15\$. Steel Rails.—The sales of the week, so far as reported, have been very light, and inquiries are limited in their number and usually for small quantities. Prices are some what higher than they have been, but it is difficult to say what rate would be fixed if work at their present rate of running. Most of them are working only half-time, while some are barely up to that standard. There is a disposition on the part of the mills to the first six months of 1885. This project No. in blast.

No. in blast.

New York. 18 12 11 4,000 2,940 2,855 adoption are rather bright at present. The advance in prices to which we have referred is not the result of this proposed restriction of production, but is really brought Weekly capac.— has been regarded with 1870 of the Manufacturers, and the prospects for its adoption are rather bright at present. The and leave favorable profits. At any rate, advance in prices to which we have referred is not the result of this proposed re- directions. Standard brands of Lehigh and North River about by the better position the mills are Some companies are tidewater delivery: No. 1 X Foundry, \$19.50 asking \$29 @ \$30 at mill One or two of @ \$20.50, a few special brands commanding them, however, seem willing to take orders \$21; No. 2 X Foundry, \$18 @ \$19; Gray at \$28 @ \$28.50. We therefore quote \$28

Steel-Wire Rods .-- No business of importance is reported, and quotations continue nominally from \$45 up, according to time of delivery. Large lots could possibly be purchased at less

Iron-Wire Rods .- Inquiries are in the market for German Coke Rods, which are quoted at \$52 @ \$55, according to quality and size of order. Small lots only are asked

Old Rails. - The Youly transaction reported in this vicinity is one of about 100 tons of Old T's on private terms. It is reported that there is a better demand in the West for Old Rails, especially Old American Rails, which are quoted slightly higher at Western points. Quotations in this vicinity range from \$17 to \$18, according to the position of buyer and seller and the quantity and quality of the Rails.

Scrap Iron .- A cargo of 600 tons of Scrap Iron from South America was sold on private terms to a dealer. A 100-ton lot of Old American Horse Shoes brought \$25, and a 100-ton lot of Old Fish Plates was sold at Foreign Bessemer continues to be quoted at \$20, f.o.b. Jersey City. The demand for No. \$18.50 and \$19 for shipment, but business is I Wrought Scrap from yard is quite light, only one or two small transactions being reported. Prices range from \$19 to \$20, according to location of the yard.

#### Coal.

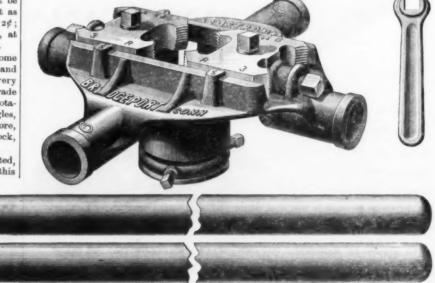
In the Anthracite Coal trade signs are a little better as concerns the wholesale dealers. Business is picking up a little, and the specials are becoming scarce as a result of the recent stoppage. Prices are spoken of as a little

The method adopted was to erect each bridge span upon rollers, and then, by means of a locomotive, pull it above the place it was to occupy on the top of the old bridge. The span was then raised by hy-draulic jacks and the rollers removed. This done, the members of the original bridge were suspended to the new truss in such a manner that the workmen were enabled to remove them, the men working upon a platform swung beneath. As soon as the old form swung beneath. As soon as the old bridge was removed the new truss was low-ered, a distance of 15 feet, to its final bear-ing upon the piers. Trains were stopped during the operation of substituting the new The total time consumed was less than 48 hours.

#### The Armstrong Stocks and Dies.

The annexed cut illustrates an ingenious arrangement of stocks and dies, brought out by Mr. F. Armstrong, of Bridgeport, Conn. The tool, though on the market but a comparatively short time, has already secured a fair degree of popularity, and its several novel and advantageous features will, no doubt, continue to commend it favorably.

As shown in the engraving, it is furnished with two adjustable and reversible dies, held in position by two binding-screws, while the depth of cut may be regulated by the feed-screws at the ends. This facility of adjustment is worthy of some note and will readily be appreciated. Each die has two sets of cutting surfaces, arranged for different sizes of work, which in this case may be either 2½ or 3 inches in diameter, and reversing of the dies is easily accomplished by removing the binding screws. The cutting surfaces have double tapers, and are so arranged that the dies will readily take hold of the work without the aid of the special attachment usually employed with these sizes, and shown at the firmer, but quotations are unchanged, viz.: bottom. It is supplied with the tool, how-stove, \$3.75 @ \$3.90, although sales have ever, in order to satisfy the wants of custom-



The Armstrong Stocks and Dies.

@ \$3.65; Pea, \$2.50, all f.o b. in New York. There is talk of another suspension of mining, in a retail way. We have now reached a to take effect soon, perhaps next week, but time which is practically between seasons, nothing has been agreed upon. The manufacturing demand in Eastern Pennsylvania Mr. Armstrong's New York office is at 132 and have since been working up their stocks is said to be light, mills and furnaces buying sparingly.

Bituminous Coal is also said to be a shade better, but in some quarters this is denied. The general tone is dull. Cumberland and classified are quoted \$3 @ \$3.50, and freights are proportionately low, so that it may be truly said, "the Steam Coal trade is in a bad way for the producer and carrier," and doubtless prices are "far below the relative value of Hard Coal."

The total amount of Anthracite mined thus Merchant St-el.—The demand is moder- far in the year 1884 is 4,019,446 tons, comate in a general way, though here and there pared with 3,672,405 tons for the corresponding period last year—an increase of 347,041 tons.

Sailing Ships vs. Steamers.-There is terdency at present, observes one of our English exchanges, to supplement the mer-cantile marine with many new sailing ships. It was thought that the class would, with the introduction of steam tonnage, have become speedily extinct, and the gradual diminution of wooden vessels for some time favored this conjecture. A change has, however, of late been seen, and it is a change that is not without interest to the coal trade. At some of the English ports several large new vessels of wood have been a desirable order were to be thrown upon recently built, and at present on the Tyne the market. It is understood that most of the mills now have from four to six months' ships are in course of construction. The reintroduction of sailers to a much larger extent than was some time ago anticipated is no doubt due to the spirit of ecor which has perforce during the past two years manifested itself in the shipping busicurtail production for a time, a movement ness. The reduction of freights, the in-being on foot to run only on the day turn for crease of dues and a diminished carrying trade have led many shipowners to economize, and it is held by some that, under favorable circumstances, the ships that use no fuel will be able to make quick voyages

tenthal and Stranow—Krnsko. The ravine the largest order placed in the South since crossed was 98 feet deep, and the span of bridge was 131.2 feet; weight of truss, 80 places indicate increased inquiry for iron."

4 1/4 @ 5 1/4 . These quotations are shaded been made as low as \$3.50; Chestnut, \$3.40 ers, some of whom, until actual use has convinced them of the contrary, consider it a necessary adjunct. The tool is compact and strongly built throughout, and can deservedly claim the attention of pipe-fitters and others Church street.

A very interesting statement upon the auses of idleness has recently been made by the manager of a charitable lodging house in this city, based upon careful observation supported by practical tests. He says it is a great mistake to think that all men out of work are unworthy vagabonds, who will not work unless compelled, though no doubt a high percentage are. He believes that 50 per cent. are unworthy on account of drink and cannot keep work when they get it, who about 2½ % better than these figures, while far in the year 1884 is 21,261,851 tons, comnot for this undermining curse; 25 per cent. would be industrious, worthy men were it are really unworthy from their habitual period last year. The total amount of laziness and unwillingness to do anything lituminous sent to the Eastern markets thus in the shape of labor; 20 per cent. are worthy, able and willing to work, but can not get it to do, and 5 per cent. are worthy, but unable to work on account of some phys ical or mental defect.

> The old property of Van Leer & Custer, at Royersford, Pa., has been taken by Rogers & Benjamin, who have added a new build-ing and commenced the manufacture of firebrick and stove linings of all kinds. Mr. Rogers is also a member of the firm of Grander, Rogers & Co., stove manufacturers, whose foundry adjoins. The latter firm re-port a brisk trade, and are especially busy on a Government contract secured some time

> Mr. Wm. Clark, senior member of the firm of Wm. Clark & Co., proprietors of the Solar Iron Works, Buffalo, died in Boston last Saturday from blood poisoning, resulting from an operation which was performed on one of his hands. Mr. Clark was also connected with the Pittsburgh Bessemer Steel Company, and with the Carrie Furnace Company

> Haverford College, which is located a few miles from Philadelphia, on the Pennsyl-vania Railroad, has established a department of engineering, under Prof. James Beatty, Jr., embracing the mechanical, civil and sanitary branches. A fully-equipped ma-chine shop has just been completed. In the civil-engineering studies will be included a course in practical astronomy.

of replacing an old-style iron bridge by one of later construction on the line of railroad of the North of Bobemia, between Kuttenthal and Stranow—Krasko.



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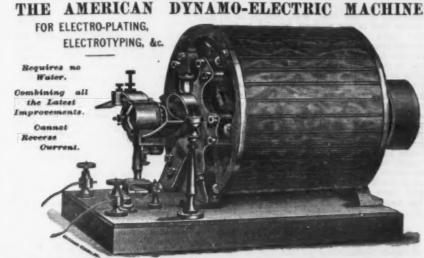
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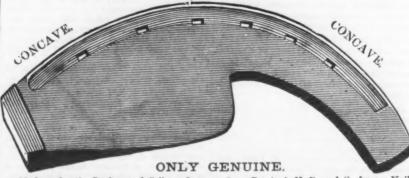
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J. V. Quick, Philadelphia.
C. J. Holman, Durango, Mexico.
W. W. McGugin, Olin Furnace, Ohio. There were also present in the hotel a number of ladies who had accompanied the

members, but who found other and more congenial occupations than in attending the usiness sessions.

President W. H. Lee opened the session with a brief ADDRESS FROM THE CHAIR.

which was well received. He welcomed the association to Missouri, and expressed pleasure in being in a position to reciprocate some of the attentions which had been else-

where shown the Missouri members. He continued as follows:

The price of iron has shown a steady decline since the last meeting, and to-day it is doubtful if there is one furnace in the United States making money. Some might be disposed to question this statement, but I feel sure it is warranted by the facts when everything is taken into account. What we need to discover is not how to restrict proin iron have much detracted from their in o the state of the duction by an agreement, but how to so cheapen production as to meet the existing market. In Southwest Missouri we have the easiest smelting ores to be found anywhere, yielding 57 per cent. in the furnace and giving a ton of iron to 80 or 90 bushels of charcoal, and even less in some instances. We shall show you wood giving charcoal weighing 25 pounds to the bushel. In the southing 25 pounds to the bushel. In the south-eastern part of the State we can show you ores yielding 65 to 67 per cent. of iron, of Bessemer quality. When you have gone over the field you will agree with us that nature has done much for us, and we ask you to tell us wherein we have failed."

Mr. Lee then summarized the iron-trade.

Mr. Lee then summarized the iron-trade Mr. Lee then summarized the Front-trade statistics of Great Britain and the United States: "For Great Britain there seems to be no relief; but with us, if we call a halt to our furnace building for a few years, the country will before very long, owing to a population which is increasing faster than that of any

meeting, referred to a committee for consideration, with instructions to report upon it before the close of the meeting.

Mr. John Birkinbine, secretary, presented two reports, as secretary and treasurer, which showed a satisfactory condition of affairs in the business of the association. It now has 364 active and 14 foreign members. (Gloucestershire) and in South Wales. Its Chief center, however, is the West Coast, chief center, however, is the West Coast, chief center, between the control of th now has 364 active and 14 foreign members.
The active members are apportioned as follows; Pennsylvania, 91; Missouri, 39; New York, 35; Ohio, 34; Minnesota, 32; Alabama, 27; Wisconsin, 11; Maine, 11; Connecticut, is there graded as under 27; Warvland, 0; other contents of the property 27; Wisconsin, 11; Maine, 11; Connecticut, 16; New Jersey, 10; Maryland, 9; other

States, from one to six each. The treasurer's report showed a balance in No 2 Be atte.

bank and good assets for a considerable atte.

At the last meeting a committee of or member from each State was appointed to legislation making the association standard bushel for charcoal-2748 cubic was it reported that this had been accom-plished; but in nearly every State there were indications that the matter would receive favorable consideration at the next ton. session of the Legislature.

In the afternoon the association was called to order at 3 p. m. and proceeded to the reading and discussion of papers. The first paper called for was one by Mr. J. C. Bayles, of New York, on

THE GRADING AND WAREHOUSING OF PIG IRON IN GREAT BRITAIN.

No. 1 Forge. Mottled. White. No. 1 Foundry. No. 3 Foundry. No. 3 Foundry. No. 4 Foundry.

In all, seven grades. In former years the Scotch iron-makers used native ores ex-clusively, and are said to have been very particular to maintain uniformity of stock The National Association of Charcoal Iron Workers was in session in this city during the past week, and had a successful but of late they have fallen into the habit of ing percentages of phosphorus and sulphur. The four numbers of the foundry grades ant and profitable meeting.

and any profitable meeting.

a large number of local members and associates, the following gentlemen registered as visiting members and responded to the roll-call at the first meeting, held in the Southern Hotel, Tuesday, September 30, at 11 pig may indicate. The grading of Scotch pig is, consequently, no more accurate than that of American pig, and, as different makers of American pig, and, as different makers and follow different mixtures are different mixtures and follow different mixtures are different mixtures and follow different mixtu 2 cannot be considered fixed standards. In a word, the grading is much the same in Scotland as it is all over the world.

The system of selling pig iron on warrants is in vogue in three different parts of Great Britain, viz., in Scotland, in Cleveland (the district of North Yorkshire, of which Middlesboro' is the center and industrial capital), and on the West Coast, which last comprises trict of Lancashire. Scotland, however, was the first, and is still the leading, exponent of this system. The storekeepers, Connal & Co., Glasgow, decline to furnish official details of the system they carry out, but the following particulars are sufficiently accurate for all ordinary purposes: The pig iron is sent into the stores of Messrs. Connal, who have enjoyed a practical monopoly of this business for many years. There the iron is examined and received if found up to the ordinary standards. Warrants are then issued, each warrant representing 500 tons, of which three-fifths are for No. I pig and two-fifths for No. 3 pig. These warrants are negotiable documents, and are, indeed, the chief medium of speculation as well as of legitimate buying and selling on the Glasgow Exchange. The iron they represent is quoted at so much per ton on the market, and a buyer may purchase any quantity—not necessarily the full amount represented by a warrant. A rent of id. per ton per month is charged for storage, and a small fee is payable for transfers as well as deliveries. and a small fee is payable for transfers as well as deliveries. Up to recently these warrants were unimpeachable in every way, but, as has been reported from time to time in *The Iron Age*, a controversy has taken place in which the whole question has been raised, and the system of storing on warrants seriously impeached. Of the 588, coo tons held by Messrs. Connal at the date of the latest mail advices, warrants are in circulation for say, 540,000 tons, the balance or the latest main advices, warrants are in circulation for, say, 540,000 tons, the balance being held on account of particular makers using the stores for convenience of deliver-ies. Glasgow warrants at one time consti-tuted the leading criterion of the condition of the whole British iron markets, and in some quarters are still looked upon as an some quarters are still looked upon as an accurate indication of the course of prices; but the competition of other localities and portance as commercial barometers, notwith-standing the fact that Scotch warrants may at any moment become a favorite medium

for speculation.
In the Cleveland or Middlesboro' district,

pig iron is graded as follows: No. 1 Foundry. No. 2 Foundry. No. 8 Foundry. No. 4 Foundry. No. 4 Forge.

Mottled. White. Refined Metal. Kentledge. Cinder.

These are all graded as G. M. B., or "Good Merchantable Brands," which are stored and delivered without distinction or warranty at the option of the seller (as in Scotland) on warrants. The official stores at Middlesboro', as at Glasgow, are managed by Messrs. Connal & Co., who receive and deal with the iron in the same manner as already described. There is much less business done in warrants in Middlesboro', however, than

No 1 Bessemer (or hematite).

No 2 Bessemer (or hematite).

No 4 Forge Be (or hematite).

No 4 Forge Be (or hematite). No. 3 Bessemer (or nematite).

No. 3 Bessemer (or hematite).

No. 5 or Gray Forge,
Bessemer (or hematite).

No. 5 or Gray Forge,
tite).

Mottled (or hematite).

White (or hematite).

Up to the summer of 1881 no system of inches, or 20 pounds—uniform all over the country. From only one State, Maryland, vogue on the West Coast, but in June of that year a copartnership, styled the West Cumberland Storing Company, was formed for carrying out such a system at Working-ton. The methods of this company are explained in a circular-letter to the trade, bearing date June 10, 1881, from which I

"The company will be ready to receive pig iron delivered into their store at Workington on and after the 20th inst. The fol-lowing ironmasters have already agreed to deliver pig iron free into the store on same terms as f.o.b. Workington: The West Cum-In response to the very complimentary invitation extended to me at the last annual meeting of this association, I have the honor to submit the following notes on the grading and warehousing of pig iron in Great and warehousing of pig iron in Great Bay Hematite Iron and Steel Company, Limited; the Lowther Hematite Iron Company, Limited; the Moss Bay Hematite Iron Company, Limited; the Moss But it has not become a dependence of either makers or consumers, for the reason that it

iron will be stored in regular turn, according to the intimations received, and war-rants will be issued in respect of the same. The charges for piling, weighing, loading into trucks, unloading, reweighing and putting f.o.b. in Workington dock or on railway siding will until further notice be 1/ per ten, payable on the iron being taken into store. The charge for rent will be ½d. per ton per fortnight or fraction of a fortnight, beginning from the day when the iron is de-livered to the company. The charge for registration or transfer will be 1/per 100 tons, or fraction of 100 tons, on all iron which is stored or transferred in the books of the company from one party to another, whether fresh warrants are granted or not. The company claim a lien on all iron stored with them for all charges in respect of the same, or for any charges remaining due to them by the holders of warrants. The company only undertake to store iron on condition that the same must be removed on the company giving pine months' notice to the parties in whose name or names the iron stands registered in their books, and, if after such notice the iron is not removed, the company reserve to themselves full power at the west coast of the county of Cumberland any time after the expiration of such period and the Furness (or extreme northern) disother ground, at the risk and expense of the owners. All charges thereby incurred to be paid before the company give up possession All charges thereby incurred to be

of the iron."
Since June, 1881, the Workington ware house has been in regular operation, and now contains over 50,000 tons of pig iron. Speculation in these warrants is on a limited scale, but they are made use of for shipping and other deliveries. The storekeepers themselves, as well as merchants, will make advances on the warrants, which are in

other respects negotiable securities.

Shropshire pig iron is largely used in mixtures for machinery castings, and particularly for chilled rolls. It is graded as follows:

No. 1. Melting foundry.
No. 2. " " No. 5. Strong forge.
No. 3. Foundry and best open forge.
No. 4. Ordinary forge.

This is the classification of the renowned Lilleshall Iron Company, whose iron is held in high esteem.

the Staffordshire district nearly all kinds of pig iron are made, and qualities are as various as brands, owing to the different mixtures of native and transported ores. Silicious ores from Northamptonshire are largely used, as are also ores from Derby-shire, Lincolnshire and elsewhere. The shire, Lincolnshire and elsewhere. The standard gradings in this district are as follows:

This grading is self-explanatory—the word "mine" being taken to mean that all native ores are used, and "part mine" that the furnace is charged with various kinds of ores. Cinder, of course, is the meanest and cheapest kind.

Derbyshire pig iron is unique in being of

strictly uniform quality, with such allowance as must necessarily be made for irregularities in furnace wasting. All the Derbyshire smelters use the Northamptonshire ironstone. A little of the Lincolnshire ore is used by one or two firms, but it is practically the same as Northamptonshire, except that it contains more lime and less silicon. A leading ironmaster of the district says:

master of the district says:

"I don't think any foundry or forge would give i/per ton more for any one Derbyshire brand than for any other. Formerly we all used native Derbyshire ironstone, which made a greatly superior pig, but cost 30/per ton more. To cheapen cost Northampton was introduced as a mixture, and then there was great difference in the 'grades,' vary-from all Derbyshire, costing 65/, asy, to quarter, half and three-quarter Derbyshire, as the case might be, down to all Northampton, costing, say, 40/. But now there is not one firm who get any Derbyshire ironstone at all, and we are all on one level. Derbywill before very long, owing to a population which is increasing faster than that of any nation of the earth, call on us for all the iron we can produce. Until then we must expect low prices, and we must resist them, not by a production restricted by agreement, but by cheapening cost and waiting for improvement due to natural causes."

Mr. Lee congratulated the association in its progress, and suggested the propriety of enlarging its scope to include all departments of iron and steel making. This suggestion was subsequently, by vote of the meeting, referred to a committee for consideration, with instructions to report upon it before the close of the makers direct without the state of the meeting. The suggestion was subsequently, by vote of the meeting, referred to a committee for consideration, with instructions to report upon it before the close of the meeting. at all, and we are all on one level. Derby-shire pigs rank higher and fetch a higher price than pigs made in Northampton or Lincolnshire, because the Derbyshire smelt-ers have their own coal fields and some one can only use one stone, whatever its nature may be. If by 'grading' you mean num-bers, we nearly all of us make Nos. 1, 2, 3 and 4, though some cultivate foundry iron more than forge, and vice versa.

It is somewhat anomalous to find a furnace industry in the midst of a mining district which does not use a pound of local ore, but depends on an inferior ore brought from a

Lincolnshire pig iron is graded as follows: No. 4 Forge. No. 5. Mottled. White. No. 1 Foundry. No. 2 Foundry. No. 3 Foundry. No. 4 Foundry.

It is made wholly from local ores, which are similar to those of the Cleveland district. Lincolnshire pig is largely used in Yorkshire and Lancashire for mixtures.

From this summary of the best data obtainable it will be seen that there is nothing peculiar about the grading of British pig iron. They grade a little closer, apparently, than is usual in this country, but close grad-ing is more necessary there than here, owing to the fact that so little business, co

The warehousing and warrant system present some features of interest which may be studied with advantage. They are the outgrowth of conditions in some degree peculiar to Great Britain, and became a part of her commercial system when all the world was to a greater or less extent dependent by the establishment of the wareh upon her for iron supplies. On a small warrant system, at least under exis house certificates obtained for it in at least from English practice.

any iron to put in warehouses. When the demand falls off production is curtailed and debate. pig iron does not accumulate to any impor-tant extent. If it did it is doubtful if the prudent buyer would care to supply his wants by purchasing warrants or their equivalent, and taking the chances of a sat-isfactory delivery, He prefers to know what he is having the chances of the chance of isfactory delivery, He prefers to know what he is buying, and as far as possible to deal direct with the maker or his agent. No system of warehouse grading would make those fine distinctions which the intelligent consumer finds it to his interest to make in buying iron supplies. Besides, it is usually the case that a customer can deal more advantageously with a maker or his agent, both as regards price and terms of credit than with a warehousing company. The experiment of buying and selling pig iron in the New York Metal Exchange was a failure for exactly these reasons. Consumfailure for exactly these reasons. Consum-ers would not come there to buy, and for a little while an appearance of business was maintained on speculative sales and re-sales of lots never delivered; but in a short time even this was abandoned, and the principal business of the exchange is now

It is urged from time to time by those

nterested in promoting iron warehouse schemes that the establishment of this sys-

tem here would be attended with permanent advantage to the trade by providing a balance-wheel for the market, which would effectually check sharp fluctuations. It is argued that in seasons of light demand makers could go on producing, storing their iron and using their warrants as collaterals for bank accommodations. When the de-mand quickened there would be no scarcity and no chance to run prices up as during the boom of 1879-80. The consumer could supply his wants from the storage-yards, and the fact that there was at all times a stock the fact that there was at all times a stock equal to present and immediately prospective demands would establish and maintain confidence and keep prices steady at a satisfactory average. The argument is specious, but it will not bear close scrutiny. Statistics show that the seasons of wildest iron speculation in Great Britain have occurred when Connal's stores were full and that when Connal's stores were full, and that when speculators see a chance to corner warrants the stock in store, whether large or small, does not materially affect the course of prices. On the other hand, when prices tend downward large stocks create added alarm and are powerful aids in depressing the market the moment speculation with-draws and leaves iron free to find its level. We have had experience of this in the United States, the heavy stocks of imported iron in bouded warehouse in 1881 hastening a decline which, though inevitable, would not have been so rapid nor so disastrous. Another objection to large stocks in warehouse is that makers in this country prefer to sell their own iron, and experience has taught them that it is not expedient to make more than they can sell. The principal use for warehouses would be after a "boom" better than that of those which stop on Sunday is better than that of those which do not. He also calls attention to Sunday stoppage as a belated speculators found themselves loaded means of naturally restricting production to this time and process the statement of the statement o up with iron which they could not sell and at this time, and urges the experiment for had no use for. Lots of this kind are, at this reason. In 1883 the Sunday-furnace no use for. Lots of this kind are, best, like millstones around the neck of the market. Brokers play football with them, and, until they are finally knocked down to some bona-fide purchaser and withdrawn for consumption, they demoralize prices and consumption of anything like conprevent the restoration of anything like confidence in the stability of values. I cannot see that the situation after a boom would be any better if these odd lots were aggregated

in warehouses and represented by warrants, but I can see that it would be very much worse if, as the result of a warehousing sys-

tem, furnace owners were induced to continue producing and piling up iron in dull times. In my judgment it is much better that each maker should shape his business

policy with reference to the needs of his

market, and that production should increase

finds too many avenues of profitable invest-

ment to see an advantage in carrying from year to year a great stock of pig iron in warehouse. Production is too elastic to render this necessary.

As to the argument that warrants or cer-As to the argument that warrants or cer-tificates would be attractive objects of spec-ulative interest; that they would be bought eagerly when offering even a small margin of profit, and that prices would thus be kept steady, it may, I think, be dismissed with few words. Primarily, it is not true. We see stocks and securities of all kinds made playthings of in the speculative markets. We find them for months at a time offered, without takers, at prices below their intrinsic value, and we have learned from experience that speculators operate with very little regard to the worth of what they buy or sell. Elevator certificates do not make wheat steady, and speculation is capable of running the price to a figure at which the movement ceases, even when the elevators are full and the barns of the farmers are bursting. Finally, we may ask what benefit the iron trade can hope to derive from speculation inder any circumstances? The history of the past 2½ years will furnish the answer. That alone benefits it which encourages legitimate consumption and causes two tons to be used when one was used before. Speculation cannot do this; schemes to restrict production by the banking of furnaces cannot do it. Speculation opens wide the door and invites a deluge of foreign iron from the warehouse stocks of Great Britain Artificially restricted production galvanizes into brief life the stocks which stand on the tively, is done direct between makers and border line between activity and abandonment, ready to make iron when the price permits, but incapable of meeting the conditions of a normal market.

> Looking at the whole subject from every point of view, I am profoundly impressed with the fact that the welfare of the iron trade in this country would not be promoted warrant system, at least under existing conditions; and that, so far as gradings are concerned, we seem to have nothing to learn

Mr. Frank King, of Virginia, expressed appreciation of the paper, and said it did not admit of discussion. The facts were full and ited, and the Distington Hematite Iron Company. The company also take into their is not and has not been at any time a company also take into their is not and has not been at any time a company also take into their is not and has not been at any time a company also take into their is not and has not been at any time a company also take into their is not and has not been at any time a company also take into their is not and has not been at any time a company also take into their is not and has not been at any time a company also take into their is not and has not been at any time a company also take into their is not and has not been at any time a company also take into their is not and has not been at any time a company also take into their is not and has not been at any time a company also take into their is not and has not been at any time a company also take into their is not and has not been at any time a company also take into their is not and has not been at any time a company also take into their is not and has not been at any time a company also take into their is not and has not been at any time a company also take into their is not and has not been at any time a company also take into their is not and has not been at any time a company also take into their is not and has not been at any time a company also take into their is not and has not been at any time a company also take into their is not and has not been at any time a company also take into their is not and has not been at any time a company and has not been at any time a company and has not been at any time a company and has not been at any time a company and has not been at any time a company and has not been at any time a company and has not been at any time a company and has not been at any time a company and has not been at any time a company and has not been at any time a company and has not been at any time a company and has not been at any time a company and has not been at any time a company and has not been at any time a company and h

The next paper was one by Col. Geo. B. Wiestling, of Mont Alto, Pa., read by the secretary in the absence of the author, on

SUNDAY STOPS AT THE MONT ALTO FURNACE. The paper began with a rather deprecatory The paper began with a rather depreciation of the furnace, which is a stone stack built in 1807, and subsequently remodeled from time to time. It is 9½ feet diameter at boshes by 44 feet high. It has diameter at boshes by 44 feet high. a hearth of 65 inches diameter, closed front, and a 42-inch bell. It is blown by two horizontal cylinders, 46 inches diameter by 6-foot stroke, driven through gearing by an old and badly-proportioned horizontal en-gine. The blast is heated in a home-made iron stove, constructed with reference to the needs of the furnace 40 years ago, when its product was 2 tons per day. The average temperature of the blast is 500°, and the

temperature of the blast is 500, and the fuel used exclusively charcoal.

Then follows a description of the charging during the initial stages of the blowing in, which seems to have been attended with very satisfactory working. The object of the description was to show with what sort of a furnace and under what conditions the over Sunday store have been expenditions. conditions the over-Sunday stops have been tested practically. Owing to the extreme tested practically. Owing to the extreme heat during the first week of the blast the stop was made Saturday morning, to permit an enlargement of the arches to admit more air. She was banked at 1 o'clock a. m., Saturday, August 18, and blast was not put on again until 6.30 a. m. of Monday, the 20th, a stop of 53½ hours. She went "gracefully" and "kindly," seeming to show appreciation of the period of rest allowed. Ever since then the furnace has rested on Sunday. The period of cessation is not always 24 hours. is not always 24 hours, as any necessary changes or repairs are made on Monday before starting up. The tuyere blow-pipes are so arranged that a ball of clay can be introduced into the nozzle as a stopper without removing the tuyeres or connec-tions. The gas down-comers have a damper or valve at the top, permitting the tight closing of the flue. On one occasion the closing of the flue. On one occasion the furnace remained banked from Saturday night until Thursday noon, 109 hours, and then started off on cold-blast iron without

difficulty.
Colonel Wiestling gave the detailed records of the furnace, which we cannot here reproduce, and concluded with a vigorous argument in favor of the suspension of Sun-day work at furnaces under all conditions. In this argument the moral question is given more weight than the economic. He finds that the extra fuel consumption incident to Sunday stoppage amounted to 16 cents per ton, distributed on the whole product, which is much less than has been ordinarily assumed. Colonel Wiestling thinks that assumed. continuous blowing is by no means a neces-sary condition of good working, but that the this reason. In 1883 the Sunday-furnace product of the United States was not less than 735,000 tons. If the production had been reduced 15,000 tons per week there

with attention and interest, and called out some discussion. The chairman remarked in opening the debate that there were present ironmasters who banked over Sunday and others who did not, and called on Mr. T. J. Scott, as representing the latter class, to speak. Mr. Scott said that, according to Colonel Wiestling's estimates, Sunday stops added 16 cents a ton to the cost of the furnace product. So far as he was con-cerned, that was at present conclusive evidence of the impracticability of the scheme. Iron men could not stand the pressure.

and diminish in obedience to the natural Mr. W. N. McGugin said his furnace had stood idle on Sundays for 12 years, and he laws of trade. In this country bank capital could not see that he had not done as well as his neighbors. In fact, he doubted if he would care to own stock in a furnace which was run on Sunday.

Mr. Frank King thought that Colonel

Wiestling's positive testimony, based on a long experience with Sunday stoppages, was worth more than the negative testimony of those who had not tried it, or tried it unsuccessfully. He thought that the results to the trade of such a reduction of product would result from Sunday stops at all the furnaces would be worth more to the trade than 16 cents per ton. Mr. Birkinbine closed the debate with a

strong argument in favor of Sunday stops, and urged the present as a favorable time for the trial of the experiment.

The last paper of the afternoon was one by Mr. M. N. Lilienberg on THE POSITION OF SWEDISH CHARCOAL IRON

IN AMERICA. The paper was a long one, but valuable, and we regret we can give only a brief abstract in this issue:

Although the quantity of Swedish iron products imported into America is of small account, compared with the large masses made in this country, the steady increase of their total values is great enough to attract the attention of American charcoal-iron makers. Several misunderstandings have brought the author to the belief that a review of this subject would benefit all parties, and induced him to give some facts according to his experience. Several large manufacturers in America depend entirely and others partly on the importation of Swedish iron, and the increasing demands on its good qualities imposed by improved machinery, and called forth by sharp competition, have of late made the Swedish iron industry subject to a close observation by Americans. Swedish iron has in this ountry a position different from other imported irons, and is not to be put on the same level with them. The number of its uses is greater, and its importance, therefore, more elaborate.

In the evening opened by Mr. J. A. McArthur, of Shelby, Ala., on some experiments in charcoal-iron making at the Shelby Furnace, relating especially to the better preparation of ore

(Continued on page 33.,

# Wholesale Hardware Prices, October 8, 1884.

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HARDWARE.	1
A nvils.  A Eagle Anvils American	20 %
Apple Parers.         Apple Parers.           Advance.         F doz \$\frac{1}{2}\$           Champion         P doz \$\frac{1}{2}\$           Family Bay State         F doz \$\frac{1}{2}\$           Gold Medal.         F doz \$\frac{1}{2}\$           Improved Bay State.         F doz \$\frac{1}{2}\$           Improved Bay State, with push off.         F doz \$\frac{1}{2}\$           Little Star         F doz \$\frac{1}{2}\$           New Lightning.         F doz \$\frac{1}{2}\$           Oriole         F doz \$\frac{1}{2}\$           Rocking Table         F doz \$\frac{1}{2}\$           Triumph         F doz \$\frac{1}{2}\$           Turntable, Original         F doz \$\frac{1}{2}\$           Turntable, Improved         F doz \$\frac{1}{2}\$           Waverly         F doz \$\frac{1}{2}\$           White Mountain         F doz \$\frac{1}{2}\$	5.75 1 3.25 1 5.25 0 8 5.25 0 8 5.25 1 6.50 1 6.50 1 6.50 0 8 6.50 0
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Bow Pins  Humason, Beckley & Co.'s, Nos. 1 and 2dis  Humason, Beckley & Co.'s other Nosdis  Covernit & Co.'s	60 % 70 %
Hotchiss	30 % 10 % &5 %
Spoffard's Patent. dis 500 lves' Patent Braces dis 55& Common Ball, American dis Amidon's dis Amidon's dis Bartholomew's Nos 25 27 cd dis	\$5 % 10 % 55 % 50 %
Braces   Grace   Brace   Grace   Gra	60 % 55 % 10 %
Buffalo Ball   dis     Brackets     Shelf, plain   dis 50&10&     Shelf, fancy   dis 60&     Reading, plain   dis 55&10&     Reading, Rosette   dis 60&10&1	10 %
List of June 25, 1883. dis 75 kt	10 %
Brollers, Henis' Seit-Basting. Inch. 9 10 9 x 11 Per dos \$4.50 5.50 6.50	
Buil Rings.         dist           Union Nut Co         dis 8           Sargent's.         dis 60&           Hotchkiss' low list.         dis 8           Humason, Beckley & Co.'s.         dis 7           Peck, Stow & W. Co.'s.         dis 83½£1	0%
Butts	0 % 0 % 0 % 0 % 0 % 0 % 0 % 0 % 0 % 0 %
Fast Joint, Broad dis 60&1 Fast Joint, Broad dis 60&1 Loose Joint. dis 70@70&1 Loose Joint, Japanned dis 70@70&1 Loose Joint, Japanned with Acorns dis 70@70&1	0% 1
Parliament Butts	OX OX
Parliament Butis	0 % I
Table Butts, Back Flaps, &c.         dis 60&2½&11           Inside Blind, Regular         dis 60&2½&11           Inside Blind, Light         dis 60&2½&1           Loose Pin, Wrt         dis 60&7½&1           Loose Pin, Light         dis 60&2½&1	OX TOX OX EV
Bronzed Wrought Butta. dis 40&5 € 40&1¢ Spring Hinges: Geer's Spring and Blank Butts. dis 30 Union Spring Hinge Co. 8. dis 22 Union Spring Hinge Co. 8. dis 22 American Spring Hinge Co. 8. dis 23 American Spring Hinge Co. 8. dis 23 Gem Spring Hinge Co. 8. dis 20 Gem Spring Hinge Co. dis 20 Barker's Double Actins. dis 20 Euchtman's dis 25 Euchtman's dis 25 Euchtman's dis 26 Euchtman's	S G
American Spring Hinge Co.'s         dis 36           Gem Spring Hinges         dis 30           Barker's Double Acting         dis 20&10           Union Mrg. Co.         dis 25           Bommer's         dis 25           dis 25         dis 25	S
Buckman's         dis 25           Empire         dis 90           Acme         dis 70           Climax         dis 50&10           Blind Butts         Parker         dis 75&2	POPO
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\$9; No. 3, for Brick, \$10.50. shepard's Luli & Porter Shutter Hinges. dis 70&10&5 shepard's Reversible Shutter Hinges. dis 70&10&5 lark's Improved Shutter Hinge. Nos. 0, 1, 14& 2, 24&	% Bi
S	Ra Ra Ra Ra W
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Caps—Percussion, # 1000. loks & Goldmark's F. L. Waterproof, 1-10's	Br
Pistol Waterproof, 1-10's	Br W
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Cartridges. im. List of Jan. 1, 1884—dis 50&10@60 gintral Fire. dis 83½@40 g Cards. dis 10 g Orse and Curry. dis 10 g Ottom. New list, Aug., 1883, dis 10 g Ottom. dis 10 g	N S ACRES
Carpet Stretchers. ist Sfeel, Polished	Mo File
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ged Firmers, Butcher's \$4.75 @ \$5.00 ged Firmers, Spear & Jackson's \$5.00 to £ ged Firmers, Buck Broa. dis 30 \$ 18.89 ps.  18.89 ps.  18.89 ps.  18.80 ps.  18.80 ps.  18.80 ps.	GIU. MU. MU. MU. MU. MU. MU. M
ged Firmers, Buck Bros.  14.mps.  2. Provideace Tool Co.'s Wrought Iron. dis 25 s  3. Adjustable, Gray's. dis 20 s  3. Adjustable, Lambert's. dis 20 s  3. Adjustable, Rnow's. dis 4046 s  4. Adjustable, Rnow's. dis 4046 s  4. Adjustable, Hammer's. dis 15 s  4. Adjustable, Stearns' dis 2048 10 s  5. Cabinet, Sargent's. dis 50410 s  5. Carriage Makers', Sargent's. dis 65&10410 s  6. Eberhard Mrg. Co. dis 4645 s	H
a, Cabinet, Sargent's dis 70&10 % a, Carriage Makers', Sargent's dis 65&10&10 % b. Eberhard Mfg. Co dis 40&5 %	Star Hi Cove

	vare Prices,	U
M.M.M.	Cockeyes	
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	Merrill   dis 69&11     Watrous   dis 20     & I. J. White   dis 20     & I. J. White   dis 20     Bradley's   dis 35     Adjustable Handle   dis 20     Brills and Drill Stocks     Blacksmithe'   each, \$2.50, dis 20     Blacksmithe'   self-Feeding   each, \$7.50, dis 20     Breast, P. S. & W   dis 20&10     Greast, Hotchkiss'   dis 20	AN MAN
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MFH	cos & Gamble         New list. dis 15 s           les of domestic make.         dis 50 & 10 @ 60 s           eller's Horse Hasps.         dis 50 & 10 @ 60 s           abs.         dis 26 @ 30 s           Fluting Machines.         dis 26 @ 30 s	Se Se
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Shirl Column	own Hand Fluter, Nos. 1, \$15, 2, \$13.50; 3, \$10.00, \$\psi\$  los. Hand Fluter, No. 85. \$\psi\$ dos \$15.30, dis \$05 \\ epard Hand Fluter, No. 110. \$\psi\$ dos \$15.30, dis \$05 \\ epard Hand Fluter, No. 100. \$\psi\$ dos \$15.30, dis \$05 \\ epard Hand Fluter \text{Polos \$0.00} \$\psi\$ dos \$15.00, dis \$05 \\ epard Hand Fluter \$\psi\$ dos \$15.00, dis \$305 \\ epard Hand Fluter and Sad Iron. \$\psi\$ dos \$15.00, dis \$305 \\ epard Bluter and Sad Iron. \$\psi\$ dos \$15.00, dis \$305 \\ epard Fluter and Sad Iron. \$\psi\$ dos \$15.00, dis \$05 \\ epard Fluter and Sad Iron. \$\psi\$ dos \$15.00, dis \$05 \\ epard Fluter and Sad Iron. \$\psi\$ dos \$15.00, dis \$05 \\ epard Fluter and Sad Iron. \$\psi\$ dos \$15.00, dis \$05 \\ epard Fluter and Sad Iron. \$\psi\$ dos \$10.00, dis \$05 \\ epard Fluter and Sad Iron. \$\psi\$ dos \$10.00, dis \$05 \\ epard Fluter and Sad Iron. \$\psi\$ dos \$10.00, dis \$05 \\ epard Hand Fluter and Sad Iron. \$\psi\$ dos \$10.00, dis \$05 \\ epard Hand Fluter and Sad Iron. \$\psi\$ dos \$10.00, dis \$05 \\ epard Hand Fluter and Sad Iron. \$\psi\$ dos \$10.00, dis \$05 \\ epard Hand Fluter and Sad Iron. \$\psi\$ dos \$10.00, dis \$05 \\ epard Hand Fluter and Sad Iron. \$\psi\$ dos \$10.00, dis \$05 \\ epard Hand Fluter and Sad Iron. \$\psi\$ dos \$10.00, dis \$05 \\ epard Hand Fluter and Sad Iron. \$\psi\$ dos \$10.00, dis \$10.00 \\ epard Hand Fluter and Sad Iron. \$\psi\$ dos \$10.00, dis \$10.00 \\ epard Hand Fluter and Sad Iron. \$\psi\$ dos \$10.00, dis \$10.00 \\ epard Hand Fluter and Sad Iron. \$\psi\$ dos \$10.00, dis \$10.00 \\ epard Hand Fluter and Sad Iron. \$\psi\$ dos \$10.00, dis \$10.00 \\ epard Hand Fluter and Sad Iron. \$\psi\$ dos \$10.00, dis \$10.00 \\ epard Hand Fluter and Sad Iron. \$\psi\$ dos \$10.00, dis \$10.00 \\ epard Hand Fluter and Sad Iron. \$\psi\$ dos \$10.00, dis \$10.00 \\ epard Hand Fluter and Sad Iron. \$\psi\$ dos \$10.00 \\ epard Hand Fluter and Sad Iron. \$\psi\$ dos \$10.00 \\ epard Hand Fluter and Sad Iron. \$\psi\$ dos \$10.00 \\ epard Hand Fluter and Sad Iron. \$\psi\$ dos \$10.00 \\ epard Hand Fluter and Sad Iron. \$\psi\$ dos \$10.00 \\ epard Hand Hunter and	"M" Sto
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501%	Hammers. Maydole's dis 2005	25
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5%	Wrought Chest. dls 60&1   Surface Chest. dls 60&1   Flush Chest. dis 7	0%
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243434	Patent Auger, Ives' dis 2t Patent Auger, Douglass' 9 set \$1.25 n	et et
et et	Hangers. Barn Door, old patterns	200
es es	Climax (Anti-Friction). dis 58 Zenith Anti-Friction Wood Track dis 58	436343
26	Challenge dis 50 "Champion" Medina Mfg Co\$15.00, dis 50&10	REEL
MMM	Sterling Improved (Anti-Friction) dis 60&210 Double Cut, Hartwell's	XXX
×	Cheritree	XXX
MAM	The "Boss" dis 50&10 Terry's Patent 5 in, \$12; 3% in, \$10, dis 40 Cronk No. 4 \$12: No. 5 \$14.40: No. 6, \$18, dis 50&5	MWW
	Architect. \$\Pi\$ set \$6.00, dis 20 Eclipse	10
8	Hamilton Wrought	RW.
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C	No. 1, \$12. Boston Pattern, \$18. C. Hammond & Son	8
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Bei	tion (Humason & Beckley Mfg. Co.). dis 50 ft.  nch Hooks. See Bench Stops such Hooks. See Bench Stops sthes Line, Sargent's list. dis 65 £10 g. thes Line, Reading list. dis 45 £5 £10 g. ling, Sargent's list. dis 45 £5 £10 g. ling, Sargent's list. dis 40 £10 £10 £10 £10 £10 £10 £10 £10 £10 £1	Bi
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et	Combination Ice Tools doz \$2.00 net
et ) %	Ice Cream Freezers. American, Crown and Star
18	lce Tongs.
ANN	Champion
××	Rettles.  Brass, 7 to 17 inches inclusive # 5 28¢, dis 15 % Brass larger than 17 inches # 5 32¢, dis 15 % Enameled and Tea KettlesSee Hollow-Ware
00	Enameled and Tea KettlesSee Hollow-Ware
\$ 0 %	Knives.   dis 25 %
dis	Ames' Shoe Knives
_	Moran's Shoe and Bread Knives
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MM	Door Mineraldis 35&5 %
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N 36 N	Furniture Plain
MAN	Picture, Sargent's
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883	1 Walting Committee
188	Melting, Reading.   dis 30&10 \( \) Melting, Reading.   dis 30&10 \( \) Melting, Reading.   dis 30&10 \( \) Melting, Monroe's Patent   \( \) doz \( \) 4.00, dis 40 \( \) Melting, P. 8. & W   dis 30&10 \( \) Eberhard Mfg. Co.   dis 33\( \) 3\( \) dis 33\( \) 5
0	Lanterns. dis 331/4 %
×	Lanterns.   17.50
8	Tubular, Lift Wire, No. 1, \$\psi\$ doz. 9.00 Tubular, Lift Wire, No. 1, \$\psi\$ doz. 10.50 Guards for Tubulars, add \$\psi\$ doz.
200	Tipping Tubular, \$\P\$ doz
1 2	Porter's Tin R. R., \$10
200	Lawn Mowersdis 30&5&3 @ - %
2	Lawn Mowers dis 30&5&3 @ \$\frac{\pi}{2}\$ Lemon Squeezers.  Porcelain Lined \$\pi\$ dox, \$0,00, \dis 55&5 \( \) Wood. \$\pi\$ dox, \$0,00, \dis 55&5 \( \) Wood. \$\pi\$ dox, \$8,00, \dis 53 \( \) Eureka, Tinned \$\pi\$ dox, \$8,00, \dis 10 \( \) Dunlap's Improved \$\pi\$ dox, \$8,75, \dis 20 \( \) \$\pi\$ dox, \$15,75, \dis 20 \( \) \$\pi\$ dox, \dis 33\( \) \$\pi\$ Townsend's Patent \$\pi\$ dox, \dis 30,00 \( \) \$\pi\$ dox, \dis 30\( \) \$\pi\$ dox, \dis 50\(
6	Eureka, Timed
6	Townsend's Patent
	The "Boss"
1	I Inon Mah
	Otton Chalk  Glis 55, 20, 20, 20, 20, 20, 20, 20, 20, 20, 20
1	Masons' Linen, No. 31/4, \$1.50; No. 4, \$2; No. 41/6, \$2.50.
113	Wine Clothes Calvaniend
1	Locks, Padlocks, Cabinet Locks, &c. Door Locks, Escutcheons, &c
ŀ	Locks, Padlocks, Cabinet Locks, &c.  Door Locks, Escutcheons, &c
i	Barnes Mfg. Co
182	Diets Flat Keydis 30 g Stoddarddis 30 g
ľ	Round Key Latches
100	Cabinet, Eagle
100	Angstroth & Crane's   Gold
3	A. E. Deitz, Flat Key Drawer
1	* Shepardson " or " U. S."
1	PADLOCKS.
3	fallory, Wheeler & Co
N	Vm. Wilcox & Co
E	ale Lock Mrg. Co.'s
RA	tomer's, Nos. 200 to 505
F	Star"
NB	PADLOCKS.   PADLOCKS.   PADLOCKS.   PADLOCKS.   PADLOCKS.
	Lustro.
	our-ounce bottles # dos, \$1.75; # gro. \$17.00 net
L	Tallets. dis 10&10 % graumvites dis 10&10 % dis 10&10 %
P	ignumvitedis 10&10 g enfield Block Co., Lignumvitæ and Hickorydis 30 g Ment Catters
D	ixon's (P. S. W&.) Nos 1 2 3 4 \$\pi\$ doz. \$14.00 17.00 19.00 30.00—dis 40 \$
M P	enneid Block Co., Lignumvitæ and Hickory., dis 30 5.  Ment Cutters.  Ixon's (P. 8. We.) Nos 1 2 3 4 4 5.  Hes' Challenge
W	Each\$3.00 4.00 5.00 11.00 13.00 36.00—dis 25&5 %
H	ales'Nos. 11 \$\frac{\psi}{12} \text{dox. \$15.00} \ 18.00\text{-dis 40 \$\sqrt{s}} \]
Di	ales'
Aı	Nos
E	Nos 10 12 22 2 2
Ki	Each\$3.00 2.50 4.00 6.00 10.00 eser's No. 55\$40 \$\varphi\$ doz, dis 40 \$\varphi\$
Ki	eser's Gem\$25 \$\varphi\$ doz, dis 40 \$\varphi\$ eser's Monarch\$45 \$\varphi\$ doz, dis 40 \$\varphi\$
Sil	Each \$6.00 7.00 10.00 25.00 50.00 60.00 aterprise
Be	9 dos
Ar.	Mincing Knives.
Lo	Mincing Knives.  n. (2d quality), \$\pi\$ gro, 1 blade, \$7; 2 blades, \$12; 3 blades, \$18:  Net throp's.  nith's, \$\pi\$ dos, Single, \$2.00; Double, \$3. \dis 20&10 \$5 \text{wides} wles Hdw. Co. \dis 55 \$5
Co	nith's, # doz, Single, \$2.00; Double, \$3dis 40 % wies Hdw. Codis 55 %
Sta	Wolasses Gates.  ebbins: Patterns.  chbins: (Genuine)
Ste	Color   Colo
Li	sh'sdis 20 % ncoln's Patterndis 70&10 %
Bo	See France   Glas   Socious   See State   Socious   See State
N	wire Nails
Cu	Fails         See Trade Report           will Paller.         dis 4082 ≤           vail Paller.         \$ dos \$0.00 net           ut, No. 1         \$ dos \$0.00 net
2	Nats and Washers.
Sai	oxes, 1¢ to list.
He Wa	Ant. No. 1
Tal	Fut Crackers.    Color   Color   Color
Tu	rner & Seymour Mfg. Co. # dos \$2.00, dis 5 g
U	Best.
Na	Where
Zin	ic and Tindis 60&10 %
Ma	Heable (Hammer's), No 1, \$2.25; No. 2, \$3.60; O. 3, \$4.00 & dec. Net
Pri Oli	lor's Patent or "Paragon "Brass
Oli	
ard'i	

October 9, 1884.	
Packing, Steam. N. Y. Belting & Packing Codis	Sausage Stuffers or Fillers. ' Miles' "Challenge"
Peach Parers.         # doz \$15, dis 10 %           Rotary Knife.         # doz \$15, dis 10 %           Diamond State.         # doz \$15, dis 10 %           Pencils.         # doz \$15, dis 10 %	Mites' "Challenge" # doz. \$20, d Perry # doz. No. 15; No. 0, \$21, dfs 2; Draw Cut No. 4. each, \$30.00, d Enterprise Mfg. Co. d Silver's d Saws.
Pencils.         high list, dis 50 %           Faber's Carpenters'         high list, dis 50 %           Faber's Round Gilt         \$\Percept{g}\$ gro \$8.50 net           Dixon's Lead         \$\Percept{g}\$ gro \$8.50 net           Dixon's Lumber         \$\Percept{g}\$ gro \$0.75 net           Dixon's Carpenters'         dis 408.10 %	Disston's Circular, Mill and Cross Cutdis 4: Disston's Hand, Panel, Rip. &cdis 2: Boynton's Lightning Cross Cuts, new istd
Picks. Railroad, 5 to 6, \$11.00; 6 to 7, \$12dis 60&5 @ 60&10 %	Boynton's Ice de Boynton's Lightning Hand, Panel and Rip
Picture Nails.  Brass Head, Sargent's list	W. M. & C. X Cuts, Thin Back P for Livingston's Butcher and Kitchen d Livingston's Framed Wood—
Picture Nails.  Brass Head, Sargent's list. dis 50&10 % Brass Head, T. & S. Mfg. Co. dis 50 % Porcelain Head, Sargent's list. dis 50&10 % Porcelain Head, Judd's list. dis 40 % Porcelain Head, T. & S. Mfg. Co. dis 40 % Niles' Patent. dis 40 % Pinking Irons.	Boynton's Circular and Mill Boynton's Ice W. M. & C. Champion X Cuts, Regular W. M. & C. X Cuts, Thin Back W. M. & Crescent-Ground Cross Cuts, patent December 26, 1882 W. Beace Cross Cuts, Randard W. W
Pinking Irons	Peace Circular and Mill dis 4 Peace Hand Panel and Rip dis 2 Peace Cross Cuts, Standard Free Peace Cross Cuts Thin Peace Free Free Peace Cross Cuts Thin Peace Free Free Free Peace Cross Cuts Thin Peace Free Free Free Free Free Free Free Fr
Molding	Peace Band Saws, all widthsdis 2 Richardson's Circular
Plane Irons, Butcher's\$5.00 @ \$5.25 to & Plane Irons, Buck Bros	29¢. Richardson's Hand Panel, Butcher and Wel Sawsdis: Barry's Circulardis:
Pinking Irons	Saw Frames.  White, Vermont
Pliers and Nippers.  Button's Patentdis 33½%  Hall's Pat. Compound Lever Cutting Nippers, No. 2,  5 in., \$13.50: No. 4, 7 in., \$21.00 \$ dozdis 20&10 \$	Saw Sets.
Pilers and Nippers.   dis 334,5	Stillman's Genuine \$\psi\$ doz \$5.00 and \$7.75, dis \$\fill stillman's Imitation \$\psi\$ doz \$3.25 and \$5.25, dis Common Lever \$\psi\$ doz \$2.00, dis Leach's No. 0, \$8.00: No. 1, \$15.00, d
P. S. & W. Cast Steel. P. S. & W. Tinners' Cutting Nippersadd 6 % dis 10 % Plumbs and Levels. Disston's	Nash's. dis 2 Hammer, Hotehkiss \$5.50, d Hammer, Bemis & Call Co.'s new Patentdis : Bemis & Call Co.'s Lever and Spring Hammer. dis
Plumbs and Levels   dis 45&10 %	Boynton's Patent X Cut, \$\pi\$ dos \$12.00; Hand Sax \$\pi\$ dos \$10.00  \qua
Standard Rule Co.'s New Adjustable   dis 55&10&10&10     Standard Rule Co.'s Non-Adjustable   dis 55&10&10     Johnson's Patent Adjustable   dis 65&10&10     Pocket Levels   dis	Disston's dis 2  Morrill's No. 1, \$15.00; No. 5, \$52.00, dis  Croissant (Keller) No. 1, \$15.00; No. 2, \$34.00, d
Post Hole and Tree Augers. Samson Post Hole Digger # doz \$36.00, dis 20&10 % Fletcher Post Hole Augers # doz \$36.00, dis 20 %	Hatch, Counter, No. 171
Davis' Inclinometers.  Post Hole and Tree Augers.  Samson Post Hole Digger. # doz \$36.00, dis 20%10 % Fletcher Post Hole Augers. # doz \$36.00, dis 20 % Eureka Diggers. # doz \$27 Leed's.  Vaughan's Hollow Tube Post Hole— 6 in., \$23.60; 7, 8 and 9 in., \$25.00 \( \pi \) doz, dis 20%10 % Kohler's Little Giant. # doz \$27	Onion Platform. \$6,00, d Chatillon's Grocers. d Chatillon's Eureka. G Chatillon's Family Favorite. d Family Universal. \$\pi\$ dos, 12 \( \mathbb{n}, \psi 0.00 ; 24 \) \$85.6.4 Family Turnbull's. \$\frac{1}{2}\$ dis 55. Scale Beams, List of January 12, 1882. dis 55. Scale Beams, Custer. d
White Mountain doz \$5.50	
Antrim Combination \$\text{\$\phi\$ doz \$13.50}\$  Pruning Hooks and Shears.  Pruning Hooks and Saw, \$\pi\$ doz \$13.50  Disston's Combined Pruning Hook and Saw, \$\pi\$ doz \$18.00.  Disston's Pruning Hook.  \$\pi\$ doz \$12.00, dis 20.810 \$\pi\$  E. S. Lee & Co. 's Pruner  Pruning Shears.  \$\pi\$ doz \$4.50 (@ \$4.50)  Henry's Pruning Shears.  \$\pi\$ doz \$4.00 (@ \$4.50)  Henry's Pruning Shears.  \$\pi\$ doz \$6.75 net  Wheeler, M. & Co. 's Combination. \$\pi\$ doz \$12.05  Dunlap's Saw and Chisel.  \$\pi\$ doz \$20.50  Pruning Shears.  \$\pi\$ doz \$4.50 (@ \$4.50)  \$\pi\$ doz \$4.50	Adjustable Box Scraper (S. R. & L. Co.).\$6.50, dis 2 Box, 1 Handle \$\psi\$ doz \$\frac{1}{2}\text{dot}\$, 00, dis 2 Box, 2 Handle \$\psi\$ doz \$\frac{1}{2}\text{dot}\$, 00, dis 2 Box, 2 Handle \$\psi\$ doz \$\frac{1}{2}\text{dot}\$, 00, dis 2 Foot. dis 2 Ship, Common \$\psi\$ doz \$\frac{1}{2}\text{dot}\$ doz \$\frac{1}{2}\text{Ship, Frovidence Tool Co.}
Disston's Pruning Hook.	Foot. dls 5 Ship, Common. \$\vec{\pi}\$ doz \$3. Ship, Providence Tool Co. d  Screen Corners.
Wheeler, M. & Co. 's Combination '\$ doz \$0, dis 40 \$  Dunlap's Saw and Chisel \$ doz \$0, dis 40 \$  Pulleys.  Hot House, Awning, &c	Porter's Pat. Window and Door Framedis Screw Drivers.
Pullays         Adis 65&10 %           Hot House,	Douglas Mfg Co. dis 20&1: Disston's Patent Excelsior dis 4 Buck Bros. dis Stanley R. & L. Co.'s Varnished Handles. dis 6 Stanley R. & L. Co.'s Plack Handles. dis 6 Stanley R. & L. Co.'s Plack Handles. dis 6 Sargent & Co.'s No. 1 & 20. Forged Blade.dis 68 Sargent & Co.'s No. 20 & 30, Cast Steel. dis 5 Sargent & Co.'s No. 60, Bound Blade dis 6 Sargent & Co.'s No. 60, Bound Blade dis 6 Champion. dis 7 Clark's Patent. dis 2 Crawford's Adjustable. dis 2
Hay Fork, "Anti Friction" \$0.75, dis 10&10 % Hay Fork, "Anti Friction" \$0.75, dis 10&10 % Hay Fork, "F" Common and Pat. Bushed dis 20 % dis 45 % dis 45 %	Stanley R. & L. Co.'s Black Handlesdis 5 Sargent & Co.'s Nos. 1 & 20, Forged Blade.dis 669 Sargent & Co.'s Nos. 20 & 30, Cast Steeldis 5 Sargent & Co.'s No. 60, Round Bladedis 6
	Crawford's Adjustabledis
Clatern	Screws. Flat Head Iron
Punches       Saddlers' or Drive          ⊕ doz \$2.00; 2.25; 2.50dis 55 %          Saddlers' or Drive       dis 50&5 %          Bemis & Call Co.'s Cast Steel Drive       dis 50&5 %          Bemis & Call Co.'s Springfield Socket       dis 50&5 %          Spring       ψ doz \$0.00, dis 55 %          Spring, Leach's Patent       dis 15 %          Bemis & Call Co.'s Spring and Check       dis 40 %          Solid Tinners'       ψ doz \$1.44, dis 50 %	Round Head Brass
Rail.  Sliding Door, Wrought Brass \$\Pi\$ 35\epsilon\$, dis 20 \$\frac{1}{2}\$.  Ridian Door, Wrought Brass \$\Pi\$ 35\epsilon\$, dis 20 \$\frac{1}{2}\$.	Coach, Patent Gimiet Point.        d           Bed.        dis           Machine, Flat Head, Iron.        d           Machine, Round Head, Iron.        d
Rail.   Rail	Screws   Flat Head Iron   distance   dista
Per 100 feet\$2.15 2.70 3.25 net Terry's Wrought Iron, 5¢ # foot net	Hand Rail, Humason, Beckley & Co.'sd Hand Rail, Am. Screw Cod Screll Saws.
Rakes.         dis 50&10@80 %           Cast Steel.         dis 50&10@80 %           Malleable.         dis 50&10@60 %           Razers.         dis 20 %           J. R. Torrey Razor Co.         dis 20 %           Wostenholme & Butcher         \$10 to £, dis 10 %	Lester, \$10,00.
	Shears and Scissors.  American (Cast) Iron
Retrigerators.   dis 30 @ 33\\\ 5 \\ Challenge Beer Coolers.   dis 30 \\ \ dis 30 \\\ \ dis 35 \\\ \ Challenge Beer Coolers.   dis 25 \\\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Seymour's, List, Dec., 1881
Rivets. Black Iron and Tinned	Wiss, J., & Sons' Tailors' Shears
Rivets   dis 40 @ - 5   Black Iron and Tinned   dis 40 @ - 5   Iron In bulk   dis 40 @ - 5   Iron In bulk   dis 40 @ - 5   Iron Carriage Rivets   dis 40 @ - 5   Tinned Iron Rivets and Burrs   dis 40 @ - 5   Copper Rivets and Burrs   dis 40 @ - 5   Nos. 7   8 9   10   11   12   14   15   F B .49e 50¢ 52¢ 54¢ 56¢ 58¢ 60¢ 60¢ 70¢   Rivet Sets   dis 50 %   dis 50 %   dis 50 %   dis 25	Sliding Door, M. W. & Co., listdis 50&: Sliding Door, R. & E., listdis 60&: Sliding Door, Patent Roller
# 5.49c 50¢ 52¢ 54¢ 56¢ 58¢ 00c 00c 00c 70c 00c 70c 00c 70c 00c 00c	Shiding Door, M. W. & Co., list
MollersBarn Door, Sargent's inst. die 55 d	Moore's Anti-Friction (Hanging)New list, d Ship Tools.  L. & I. J. White
Rape - Mnf's list, Aug. 7, 1809   Manila.   % inch and larger # \$ 16 ¢   Manila.   % inch and larger # \$ 16 ¢   Manila.   % and 5-16 inch # \$ 17 ¢   Manila.   % and 5-16 inch # \$ 17 ¢   % b 1546¢	Shovels and Spades. Ames' Shovels, Spades and Scoops
Acme (Anti-Friction).  Rope.—Mnf's list, Aug. 7, 1884	Groom Shovel Co
Sisal, Hay Rope	Ship Tools. L. & I. J. White. Shovels and Spades. Ames' Shovels, Spades and Scoops. dis Griffiths'. Old Colony. dis 50. Old Colony. dis 50. Hussey, Binns & Co. d. Lehigh Rife, Co. dis 50. Fayne Fettebone & Son, list Jan. 2, 1882. dis R. T. Pettebone, Pat. Shovels, new list. demington's (Lowman's Fatent). demington's deministration dem
Nory   Sad Irons   \$2.70 @ \$2.75   Self-Heating   \$2.60 per   \$2.75	Rowland's, Steel.
Vory   Cad Irons   100 m \$2.70 @ \$2.75	Square Frames, by case
Combined Fluter and Sad Iron. & doz. \$15.00, dis 15 % Chinese Laundry (N. E. Butt Co.). 856, dis 15 % New England 5¢, dis 15 %	Spoke Shaves. Defiance Metallic
Bacder & Adamson's Flint, 00 to 1%, \$\text{15.0} \pi \text{ ream} \\ Bacder & Adamson's Flint, 2, 2\(\phi \& 3\), 5.00 \pi \text{ ream} \\ Bacder & Adamson's Flint, 2, 2\(\phi \& 3\), 5.00 \pi \text{ ream} \\ Bacder & Adamson's Flint, assorted, 4.76 \pi \text{ ream} \\ Bacder & Adamson's Star	Bafley's (Stanley R. & L. Co.), new listdis 3: Stearns'
Se, dis 15 %  Sand Paper and Emery Paper  Baeder & Adamson's Flint, 00 to 1½, 44.50 % ream  Baeder & Adamson's Flint, 2, 2½ & 3. 5.00 % ream  Baeder & Adamson's Flint, 3, 2½ & 3. 5.00 % ream  Baeder & Adamson's Flint, 3, 2½ & 3. 5.00 % ream  Baeder & Adamson's Flint, 3, 2½ & 3. 5.00 % ream  Baeder & Adamson's Flint, 3, 2½ & 3. 5.00 % ream  Baeder & Adamson's Flint, 5, 2½ & 3. 5.00 % ream  Baeder & Adamson's Flint, 5, 2½ & 3. 5.00 % 11.50  Barties Best Flint, Nos. 0 to 1½ % ream 4.50  Barties Best Flint, Nos. 3½ % ream 4.50  Barties Best Flint, No. 3½ % ream 4.50  Barties Emery Raper. % ream 35.50 % 11.00 dis 30&10 %  Barties Emery Cloth % ream 18.00 % 25.00 % (dis 20 %  Crocus Cloth % ream 18.00 % 25.00 % (dis 20 %  New England, same list as B. & A. Flint dis 30&10 %  Bash Cord dis 30&10 %  Sash Cord.	Spoke Trimmers
Bartles Best Flint, No. 314. Fream 5.50 = \$\ \times_{\text{Columbia Flint, all Nos.}} \text{Fream 4.00} \text{Tream 4.00} \text{Madison Mills Flint, all Nos.} \text{Fream 3.50} \text{Bartles Emery Paper. Fream \$6.50 \text{@ 11.90 dis 30&10 \text{\chi}}	Speens   Gas 70
Bartles Emery Cloth # ream 18.00@ 20.00 { dis 20 % Crocus Cloth # ream 18.00@ { dis 20 % New England, same list as B. & A. Flint dis 30&10 % Gage's	Wm. Rogers Mfg. Co.         dia 508           Holmes, Booth & Haydens.         dia 56           Holmes & Edwards Silver Co.         dis 508           German Silver.         dis 4085684
Sash Cord.  Common.  P b, 121/6 @ 13¢ net  Patent.  White Cotton Braided.  S39/6 @ 34¢ P b net	Cast Steel, Stiver Plated.       d.         Tin (P, S, & W.), Teas.       \$1.25 \( \text{g} \) g         Tin (P, S, & W.), Tables.       \$2.00 \( \text{g} \) g         Tin (Cowles Hdw. Co).       d.
Common Russia Sasis. 9 139 Patent " 15¢ Cable Laid Italian " 96¢ India Cable Laid " 14¢	Tin (Cowles Hdw. Co.). case lotsd.  Squares. Steel and Irondis 50&10&2 \$\frac{1}{2}\$ Full Nickel Plateddis 50&10&2 \$\frac{1}{2}\$ extr
Sash Cord.  Common.	Squares. Steel and Iron
Spring Lake	
Morris. dis 50 % Broughton's Burgiar Proof. dis 331 % Walker's dis 10 % Attwell Mfg. Co. dis 25043814 %	Stone
naminond's window Springs. No.1 \$10.00 \( \) gross. dis 15 \( \)  Vorthur Window Springs. No.1 \$10.00 \( \) gross. dis 15 \( \)  Common Sense, 'Japanned, Coppered and Bronzed. '\( \) gross \$5.00 net '\( \)  Common Sense '' Nickal Plated '\( \) gross \$5.00 net '\( \)	Arkansas Stone, No. 1, 6 to 9 in
Spring Lake	Lake Superior Slips (Chase)
Payson's Perfect. dis 50&10 % Hugunin's "New" and "Improved Screw" Bal- ances: Malleable Iron, February, 1884, list. dis 3314 %	Gem.
ances:  Malleable Iron, February, 1884, list	Stave Political
Dond Lyes, in 500 m <sub>d</sub> ous and over # № 1% # @ 1%	patient, go ; No. o, mentum, gr.

	Tacks, Brads, &c.   New List, Sept. 1, 1882	Parellol Fisher & Mounty Double Sonor die 15 & 10
	New List, Sept. 1, 1882	Parallel, Fisher & Morris Double Screwdis 15&10
	Tinned Swedes Tacksdis 30 %	Parallel, Stephens' dis 25 Parallel, Parker's dis 20
(	Tinned American Tacksdis 30 %	Parallel, Wilson's dis 50
6	A morteen Cut Tarks	Parallel, Howard'sdis 40
6	Copper Tacks and Notte	Parallel, Bonney'sdis 3313
	Swedes Hungarian Nails die 25 %	Parallel, Merrill'sdis 15@20
6	Gimp and Lace Tacks die 20 d	Parallel Backur and Union dis 40
6	Gimp and Lace Tacks, Tinned dis 30 \$ 69	Parallel Double Scrow Log dis 15&10
6	Finishing Nailsdis 25 \$	Parallel, Parker's.   dis 20
6	Trunk and Clout Nailsdis 25 %	Parallel, Simpson's Adjustabledis 40
6	Basket Nails	Saw Filers, Bonney's
8	Brush Tacks	Saw Filers, Stearn'sdis 20&10
ě	Leathered Carnet Tacks dis 20 g	Saw Filers Hopkins' @ doz \$17.50, dis 10
t	Cigar Box Nailsdis 20 <	Saw Filers, Reading dis 90010
6	Chair Nails dis 20 s	Cowell Hand Visce die 20
	Double-pointed Tacksdis 75@75&10 %	Richardson's Vise and Anvil
	Tap Borers.	Washer Cutters
,	Common and Ringdis 20&10 %	W Smith's Patent \$2 doz \$12.00. dis 20&10&10
0	Ives Tap Borers	Johnson's & doz \$11.00, dis 331/3
ć	Enterprise Mfg. Co	Penny's @ doz Pol. \$14; Jap'd, \$16dis 55
į	Clark'sdis 20210 %	Appleton's \$\pi doz \$16.00, dis 60&10
í	Tapes, Measuring.	Bonney's,dis soa to
8	Tap Borers	Richardson's Vise and Anvil.
į		Wire
ě	Thermometers. Regular list dis 25 %	Brass and Copper new list, Jan. 18, 1884 dis 20
ř	Tin Case	Market, Bright and Annealed, Nos. 0 to 18dis 67%
,	Transom Lifters	Market, Coppereddis 6216
	Thermometers. Regular list dis 25 % Thermometers. dis 80 % Transom Lifters. dis 35 % Transom Lifters. dis 35 % Reiher, Imp. Lifter, list, Oct., 1885. dis 35 % Reiher, Imp. Lifter, list, Oct., 1885. dis 35 % Tobacco Cutters. dis 50&10&2 % Enterprise Mfg. Co. (Champion). dis 20&10 & 2 % Wood Bottom. # dos \$10.00, dis 30&10 & 4 & 4 & 6 & 6 & 6 & 6 & 6 & 6 & 6 & 6	Weire:  Brass and Copper new list, Jan. 18. 1884 dis 20% Market, Bright and Annealed, Nos. 0 to 18. dis 47% Market, Coppered dis 52% Market, Calwanized dis 53% Market, Tinned, Tinned list dis 57% Stone, Bright and Annealed Nos. 19 to 29. dis 57% Stone, Bright and Annealed Nos. 27 to 36 dis 57% Stone, Bright and Annealed Nos. 27 to 36 dis 57% Stone, Galvanized, Nos. 19 to 30 dis 57% Stone, Galvanized, Nos. 19 to 30 dis 57% Stone, Tinned, Tinned list dis 57% Tinned, Broom Wire dis 67% Annealed Fence, Nos. 10 to 14 dis 67% Fence Staples, Galvanized № 10 footby Fence Staples, Galvanized № 10 footby Fence Staples, Galvanized № 10 footby Stole Wire on Spools dis 55 Steel Multer Nos. 7 to 30 dis 55 Steel Multer Wire. Clothes Line Wire, Galvanized № coll 25 € 60 dot № 16 55
,	Reiner, Imp. Lifter, list, Oct., 1883dis 35&5 \$	Stone Pright and Appealed No. 104-20
8	Tobacco Cuttons	Stone, Bright and Annealed Nos. 19 to 26
	Enterprise Mfg. Co. (Champion)	Stone, Galvanized, Nos. 19 to 30 dia 5214
	Wood Bottom % dor \$10.00 dtr 20&10 %	Stone, Tinned, Tinned list
ě	All Iron 9 dox \$10.00, dis 30&10 %	Tinned Broom Wiredis 6236
5	Nashua Lock Co.'s	Cast Steel Wiredis 521
b	Wilson'sdis 50 %	Annealed Fence, Nos. 8 & 9
	Cupper (Sargent & Co.) @ doz \$24, dis 50&10 %	Fence Stanles 20 % 505L
	Tinners' Tools and Machine doz \$20,00, dis 40 %	Fence Staples, Galvanized W 15 6@65
Ę	Machines (P. S. & W.) list add 20 g	Stubs' Steel Wire
8	Tools (P. S. & W.). add 6 g dis 10 %	Barb FenceSee Trade Repo
ĉ	Traps.	Wire on Spoolsdis 55
ċ	Traps   dis 35 g   Game, Newhouse   dis 35 g   Game, Newhouse   dis 608:10 g   Game, Blake's Patet.   dis 608:10 g   Mouse, Wood, Choker   # doz holes, 15¢   Mouse, Round Wire   # doz \$1.50, dis 10 g   Mouse Cage, Wire   # doz \$2.50, dis 10 g   Mouse Catch'em-alive   # doz \$2.50, dis 15 g   Mouse Catch'em-alive   # doz \$2.50, dis 15 g   Mouse Catch'em-alive   # doz \$2.50, dis 10 g   Rat.   Decoy   # gross \$10 net   Game   F gross \$10 net   Game   F gross \$10 net   Game   Game	Wire on Spools. dis 55 Steel Music Wire, Nos. 7 to 30
Ê	Game, Oneida Patterndis 60&10 %	Clothes Line Wire Galvanized & coil 95¢ @ 40¢ p.
É	Game, Blake's Patentdis 40&10 %	Wire Cloth, green, drab and black, \$2 100 sq. ft.
6	Mouse, Wood, Choker doz holes, 15¢	\$2.00 @ 2.25 n
į.	Mouse Cage Wire doz \$1.50, dis 10 %	Wrenches.—American Adjustabledis 45
ŝ	Mouse Catch-'em-alive # doz \$2.50, dis 10 %	Baxter's Adjustable "S"dis 3314
ì	Mouse, "Bonanga". # gross \$10 not	Coost Convine
Ĝ	Mouse, Delusion # gross \$18.00, dis 20 5	Coest "Mechanics"
í	Rat. Decov " # doz \$10.00, dis 10 %	Coes' Pattern, Malleable dis 70&15
ş.	Trowels Lothrops' Brick and Plastering. dis 20&10 g Reed's Brick and Plastering dis 15 g Disston's Brick and Plastering dis 20&10 g Peace's Plastering. dis 25 g Clement & Maynard's. dis 20 g Rose's Brick dis 15 g	Coes' Pattern, Wroughtdis 75
ě	Reed's Brick and Plasteringdis 20&10 %	Gtrard Standarddis 65&10
	Disston's Brick and Plastering dis 208 10 8	Bowle & Collis Details Complete March 199
	Peace's Plastering dis 25 4	Romis & Call's Marrick's Pattern die 25
6	Clement & Maynard'sdis 20 \$	Bemis & Call's Brigg's Pattern dis 25
è	Brade's Brickdis 15 %	Bemis & Call's Cylinder or Gas Pipedis 40
ž	Worrall's Brick and Plastering	Aiken's Pocket (Bright)
Ě	Rose's Brick	The Favorite Pocket (Bright) doz \$4.00, dis 40
É	Triers.	Agricultural Wranches Phorhard dis 2314
ġ	Butter and Cheese dis 25 %	Boardman's dis 25
b c	Penfield Block Cole Bush, &c.	"Always Ready "dis 25
ž	Twine. dis 40 %	Alligatordis 40&10
~	No. 12, Flax Twine, Wand Wan Rolls 186 204	Donohue's Engineerdis 25
	No. 18, " " 14 and 16 " 17¢ 18¢	Novetty for Common Tube No 2 10 inch \$20.00
ž	No. 36, " " 1/4 and 1/6 " 17¢ 18¢	Novelty, for Common Tubs, No. 3, 11-inch 34.50
ž	Chalk I too Coats	Excelsior, for Stationary Tubs, No. E. 10-inch 39.00
É	Mason Line Lines 1 Balls	Excelsior, for Stationary Tubs, No. F, 11-inch 43.50
É	2-Ply Hemp, 14 and 12 m Balla (Spring Trains)	Excelsior, with Folding Bench, No. A, 10-inch 48.00
t	3-Ply " 1 m Balls14¢	Universal No. 21/
	3-Ply 11/2 m Balls	Universal, No. 2
	Cotton wrapping, 5 Balls to b	Adams & Co. No. 8
ť	Cotton Mong 6 9 12 and 15 Balls	Peerless No. 21/6 30.00
	Step	Peeriess No. 316
ξ	Vises. Solid Box. dis 50 <	"Metropolitan " No. 2
Ē	Solid, Peter Wright's	"Metropolitan." No. 214 30.00
É	V   Solid Box   dis 50 ≤   Solid. Peter Wright's   15\s\(\epsilon\)   Solid. Wilkinson's   14\(\epsilon\)   14\(\epsilon\)   15\(\epsilon\)	Wrought Staples, Hooks, &cSee Hooks.
5		Donohue's Engineer
6		
ŝ	THE IENNINGS & ODIDER	N MANIELACTITETNO CO
í	THE JENNINGS & GRIFFI	N MANUFACTURING CO.
É	94 - 979 700 - 000	TTDEBER OF

## MANUFACTURERS OF

Mechanics' Tools and Boring Implements,

## THE L'HOMMEDIEU AUGER WORKS,

The Oldest Auger Works in America.

ESTABLISHED BY JOSHUA L'HOMMEDIEU IN 1818.

In ordering Ship Augers be sure that they bear the stamp of "L'Hommedieu" or "Watrous & Co.," as these are our only trade-marks. Goods bearing these brands are fully warranted by us.

C. E. JENNINGS & CO. 96 CHAMBERS ST. NEW YORK



\$2.25, Retail Price,

for this new and beautiful pattern Coal Vase (see cut). Inside Reservoir, Stamped Cover, Artistic Decoration.

Our figures to the Trade will insure a good profit.

Also a large assortment of the Jewett Patent Coal Vases, with Fire-Set Attachments, in artistic design.

Send for Illustrated Circulars.

## John C. Jewett & Sons,

BUFFALO, N. Y.

### ALLARD'S PATENT Spiral Screw Driver.

The Screw Driver herewith represented is designed more especially for light and rapid work, and for the use of those mechanics who have large quantities of small screws to drive they are invaluable, saving many times their cost in an incredibly short time.

Cabinet-Makers, Coffin-Makers, Carriage-Makers, Machinists, Gun and Lock Smiths, &c., will find it a very convenient tool for running in light machine screws.

DIRECTIONS FOR USING.

Grasp the handle in the right hand, taking the neck of shank between the thumb and forefinger of left hand, placing point in nick of screw, holding it there, withdraw handle gently, release the shank slightly, and press on hindle, holding it firmly. To draw a screw, press the shank into the handle, and use as a common screw driver. If desired, it may be used when extended as a common screw driver by simply giving the shank a twisting jerk, causing the nut to recede and become locked.

Price \$2.25. Sent by Mail, postage paid, on receipt of \$2.40. DISCOUNTS TO THE TRADE,

### ALFORD & BERKELE COMPANY,

SPECIAL AGENTS,

P. O. Box 2002.

No. 77 Chambers St., New York.

## POST'S

### Waterproof Belt Oil and Leather Preservative,

FOR WET AND DRY LEATHER BELTING.



### The Standard Belt Oil of the World.

Leather dressed with this oil will not crack or rot, as heat, cold, water or gas has no effect on it. It will spread one-third further and last much longer than any oil for the same purpose. It never turns rancid; will keep in any climate. Belts may be run in water at one end and a hot room at the other, and still be soft, dry and pliable. Warranted not to start glue-laps or gum on belts or pulleys, and to keep the surface perfectly smooth.

Beware of Imitations Sold at a heaper Price, the Color of which is well Calculated to Deceive.

In their Treatise on Machine Belting, J. B. HOYT & CO. speak of Post's

#### OILING OF BELTS.

"Care should be taken that belts are kept soft and pliable. For this purpose we de-cidedly advise the use of "POST'S WATERPROOFBELT OIL AND LEATHER PRESERVATIVE."
When applied as DIRECTED, it makes the Belt smooth, pliable and adhesive, and causes it to hug the pulley closely, so that no power is lost from lack of pulley contact. It possesses excellent preservative qualities and also renders the leather more mpervious to dampness than any article or preparation we know of.

Moisture should not be allowed to pene-trate the laps or joints, as it will dissolve the cement and cause the laps to come

#### ESTABLISHED AGENCIES.

UNITED STATES :

J. B. Hoyt & Co., New York. J. & H. Philips, Pittsburgh, Pa.
J. B. Farnum, Woonsocket, R. I.
G. D. Barr, Buffalo, N. Y.
Preston & Nott, Minneapolis Minn. Post & Co., Cincinnati, Ohio. J. B. Hoyt & Co., Chicago, Ill. Langlois & Son, Racine, Wis. Laurence & Herkner, New York. Barnum Bros., Troy, N. Y. Brown Bros. & Co., Providen Jas. H. Billington & Co., Philadelphia, Pa. Beck & Gregg Hardware Co., Atlanta, Ga. Covel & Osborn, Fall River, Mass. J. Ashton & Son, Trenton, N. J. Geo. A. Smith, Richmond, Va. W. H. Dillingham & Co., Louisville, Ky. E. B. Preston & Co., Chicago, Ill. Cameron & Barkley, Charleston, S. C. Towner, Landstreet & Co., Baltimore, Md. C. E. James, Chattanooga, Tenn. C. B. Choate, East Saginaw, Mich. E. G. Studley & Co., Grand Rapids, Mich. Mantle & Cowan, Louisville, Kv. E. F. Bradford & Co., Cincinnati, Ohio. The J. LeRoy Pine Co., Troy, N. Y. H. D. Edwards & Co., Detroit, Mich. Morley Bros., East Saginaw, Mich. J. H. & N. A. Williams Utica, N. Y. McGown Bros., San Francisco, Cal.

CANADA: Robin & Sadler, Montreal. NEW BRUNSWICK: R. Chestnut & Sons, Frederickton.

SCOTLAND: Robert Balderston, Glasgow

O, & W. Ormerod, Rochdale

If you cannot get POST'S OIL from your Belt Maker, send direct to us and we will see that you do

PRICE, PER GALLON, \$1.50.

to gallons, \$15.00.... boxing and can, \$1.00. " 37.50.... no charge for 1/4 Bhls, 75.00.... " Barrels.

We solicit Correspondence from Dealers in Manufacturers' Sup-

E. L. POST & CO.,

No. 10 Peck Slip, New York,

SOLE MANUFACTURERS.

## WHOLESALE METAL PRICES, October 8, 1884.

#### METALS.

5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
THON.—Dury: Bars, 8-10¢ to 11-10¢ % b; pro-
than 85%. Sheet, 11-0¢ to 15-10¢ P.D. Band, Hoop and Scroll, i¢ to 14-10¢ P.D. Railroad Bars weigh- ing more than 25 D P yard, 7-10¢ of 1¢ P.D.
Standard American Pig Iron.
Foundry No. 1 X

Foundry N Foundry N Gray Forgo	0. 2	X	 	 	形 tor.	18,00	@ 19.00
					g Ir		
Carnbroe				 3	e ton	20,50	@ 21.25
Coltness			 	 	R ton	28,00	((1) 22.00
Shotts			 	 	le ton	21.50	@ 22.00
Glengarnoo	:k		 	 	# ton		@ 20.50
Gartsbarrie	3		 	 	1 ton		@ 22.00

Coltness w ton	22.00 @ 22.50
Shotts P ton	21.50 @ 22.00
Glengarnock ton	@ 20.50
Gartsberrie 1st ton	21.00 @ 22.00
Langloan ton	21.50 @ 22.00
Summerlee ton	@ 21.00
Dalmellington p ton	@ 20.00
Eglinton ton	19.25 @ 19.50
Clyde	@ 90.00
Ratis.	
Steel, at Eastern milis Ton	28.00 @ 30.00
Old Rails, Ts p ton	17.00 @ 18.00
Serap.	

CIG Robins, Account
Serap.
Wrought, \$\partial ton, from yard 19.00 @ 30.
Bar Iron from Store.
Common Iron:  34 to 1 in. round and square  1 to 6 in.x 3/4 to 1 in  2 to 6 in.x 3/4 to 1 in  3 to 6 in.x 3/4 to 1 in  4 to 6 in.x 3/4 to 1 in  4 to 6 in.x 3/4 to 1 in  5 to 6 in  5 to 6 in.x 3/4 to 1 in  5 to 6 in

Norway Nau Rods		w
Sheet from	from Store.	
		G.
	American. Clear	ned
Nos. 10 to 16	10 9,70 @ 3 ¢ 3%	
17 to 90	10 B @ 3.1234 394	0
21 to 34	m 8.1216 @ 8.95 8%	
25 and 26 W	To 8,8712 (6, 8,50 4	ri d
27	D 3.50 @ 3.0216 414	ê
98	Th 8.6214 @ 412	
20	B B. ad qu	al.
Galvanized, 10 to 90 Galvanized, 21 to 24		0
Calvanized 91 to 94	10 614e 514	Ø.
Galvanized, 25 to 26	m to the the	é
Galvanized, 27	10 to 7 tie 6 to	ė
Galvanized, \$8	10 th 7520 714	
American Russia	30 % 10124 R 9	
American Russis	50 % 111Ze @ 19	
Russia	D 20 8 5 4 6 7	
American Cold Rolled B.	D de m o A de .	

Hallot John Committee of the Committee o
Iron Wire. See Wire.
STEEL.—Dury: Ingota, Bara, Sheeta, &c., val- ued at 4¢ 対 B or less, 45 5 ad, val.; valued above 4¢ and not above 7¢ 対 B, 2¢ 対 B; valued above 7¢ and not above 10¢ 対 B, 3½¢ 対 B; valued above 10¢ 対 B, 3½≰ 対 B. Extras.—Steel Bara, Rods, &c., cold hammered or polished, in any way in addition to ordinary hot rolling, 1½¢ 対 B in addi- tion to above; Steel Circular Saw Plates, 1¢ 対 B in addition to the above.

### American Cast Steel.

For	American	Steel,	see	Pitteburgh	quotations.
		Engl	ish	Steel.	

Best Cast					D 15160
Evtra Cast				ID 1636	@ 17360
Circular Saw Plates.					D 14360
Round Machinery, Ca	ast.				10 1056¢
Swaged, Cast					D 16124
Rest Double Shear				1	ID 15160
Dilloton tot conslitu					To 14 e
German Steel, Best.				9	D 10 ¢
2d quality					D 9 ¢
ad onality					ID 0 6
Sheet Cast Steel, 185 (	OF GLIBAL	INTEN			TO TO SEE
2d quality					ID 14360
3d quality				P	Ib 1234
TINDUTY : Plate					
1¢ W B ; Bars, Bloc	k 01	ad Pis	ra free.	On CHANCE	201100
Banca.		ace w of	19 Th		@ 21 4
Straits.		0000	No Di		@ 19160
English			20 10	90146	@ 21 0
Bar		*****	20 20	/81	@ 91 e
Bed gove connected	255	****	* * * A W	*****	officery A.

C 10x14   1 C 12x12   1	25	shee	ts.	 	box	\$5.50	0	\$6.2
C 20x28, 1		44		 	66	11.00	0	12.7
X 10x14   X 12x12	125	69		 	64	6.75	0	7.7
X 14x90, 11	2	66			45	6.75	B	7.7
C 1216x17	100	0 46	0	 	66	6.50	9	5.5

Charcoal Tin Plates.

#### each additional X add... " ... 6 1.50 Coke Tin Plates.

Best.

Ordinary.

	APCION.	Critical	manner y .
I C 10x14	.\$5,8734	\$5,00 @	
I C 12x12 I C 10x30, gutters, 225 sheets I C 30x38, 112 sheets	5,50	5,25 @	7.78
Terne Pi			
Prime Char, 3d C 14x20 M. F. 7.25	осели	\$4.75 @	7.00 4.50 4.8736
Tin Boiler	Plates.		
IXX 14x26, 2 sheets for No. 7 IXX 14x28, 2 "No. 8	, 112 shee	ts @ !	14.50

I X 14x20 6.50 @		0	9,61	II,
Tin Boiler Plates				
IXX 14x26, 2 sheets for No. 7, 112 she IXX 14x28, 2 " No. 8, " IXX 14x31, 2 " No. 8, "		8	14. 16.	.(
COPPER.—DUTY: Pig, Bar and Copper, 3¢ % b. Manufactured articles of which Copper is a comp value). 35 % ad valorem.	onent	of	chi	16
Ingot, Lake	1314¢ 1214¢	66	139	100/00
16 os. # sq. ft. and over Braziers Copper, ordinary sizes,	*** *	0	22	
under 16 oz. and over 12 oz. 19 sq. ft		0	24	4
og. W sq. ft		90	27	-
Circles less than 84 in. in diam " 84 in. diam. and over"		90	25 28	-
Locomotive Fire-Box Sheets "	*** *	88	25 28	-
				1
Copper Bottoms	****	a	202	-
Nickel-Plated Sheathing for boilers		96	87	1

Nickel-Plated Sheathing (2 35 " for boilers " (2 37	
Plating extra	-
Bottoms, cut to special sizes " @ 25	1
Tinning.	
14x48, by the case	ij
O'Neill's Patent Planished CopperNet	1
2 and 16 oz. and heavier. 35¢ By the case. W 20 34	d
12 og. and lighter38¢ " " 87 Boiler Sizes.	g
7 in., 14x52. 8 in., 14x56. 9 in., 14x60.	
14 and 16 oa. and heavier. 87¢ By the case. W th 36	d
(And all sizes not over 20 in. wide.)	,
(And all sizes not over 20 in. wide.) 14 and 16 oz. and heavier	¢

#### Copper Wire.—(See Wire.) Sheathing Metal.

#### ellow Sheathing Metal, 🗑 🗈

BHLASS A	NIP GENERALAN	SILVER.	White Shavings, No. 2, So
	e's Gauge the Stan Gauge the Standa		Solid Stock
Brass Manufac	turers' Price Lis	t, January 1	7. Old Newspapers
1884		dis. 20	Fure Manllas

	LEAD.—DUTY: Pig, \$2 \$2 100 D; Old Lead, \$4 \$2 D: Pipe and Sheet, \$4 \$2 D.
	American 4 @ 4.12160
	Bar
F	Block Tin Pipe40¢
0	Tin Lined Pipe
	Shot Drep, 6¢; Buck, 7¢ Chilled Shot Prop. 6¢; Buck, 7¢
0	ANTIMONY.
	Hallett's
0	SPELTER—Duty: Pigs, Bars and Plates, \$1.50 9 100 lbs.
-	American, cash
)	ZINC—Duty: Pig or Block, \$1.50 P 100 lbs. Sheet, 256 P D.
)	600 D casks 5.50 @ 5.62140 9 D.
ì	Zinc.—Open
1	Zine Tubing-Dis. 25 1.
H	Plain
	Fancy
1	Scotch and Extra Patterns

						.8
BABBITT N. P. U A. 98¢; B,				P D ?	@ ?	.50
WIRE.	Wire.		np in 68	b bundl	66.	
99 00 / 0	10, 11,	19,	18, 14,	15, 16,	17,	18
Nos. 00 to 9,	44					

4	" Bale Wire, Nos. 7 to 12
P	Annealed Market Wire)
Ď.	" Fence Wire, Nos. 8 and 9. dis 65
Ď.	" Grape Wire. Nos. 10 to 14
Ė	" Bessemer Steel Wiredis. 5716 @ 60
ġ.	Coppered Market Wiredis. 60
ß.	" Bale Wire, Nos. 7 to 12dis. 60
į.	Galvanized Market Wire
	Galvanized Market Wire dis 50
1	
	Stone or Weaving Wire.

	-	-									
	Sto	ne	or	W	eav	ing	- 11	fire			
ов	. 16	17	18	19	190	91	22	28	24	25	26
enta	. 14	15	16	19	20	21	22	23	24	25	26
08											
ents											
os. 16 to											
19 to	26.					****	68	65	0	673	5 %
27 to	36.						44	673	6 @	70	16
alvaniz	ed S	tone	Win	10			44	45	0	50	8
			Ste	eel	W	ire.					

Cast Steel, Stee	Wire li	at	 dis.
Hrass Old English		Copper the Standa	20, Gild

		High	Low	and
		Brass	Brass	Copper.
A11.7	Nos. to No. 16.	The Course	The course	coppes.
	clusive	\$0.22	\$0.26	20,30
	17 and 18		.27	.31
56	19 and 20		.98	.82
66	21		.99	.38
66	22		.80	.34
0.6	28		.32	.86
64	24		.34	.88
44	25		.00	.40
44	26		.89	43
84	27		49	.46
66		.42	46	.51
64	28	.45	40	.54
64	39	-48	.50	
44	30			.62
44	81	.51	.55	.07
44	82	.55	.50	.78
	88	.50	.68	.80
8.5	84	.64	.68	.95
4.5	35	.70	.74	1.30
9.5	86	.76	.80	1.50
8.6	87	1.00	1.04	1.70
66	88	-1.30	1.34	2.00
64	89	2.00	2.00	8,25
64	40	2.00	9.60	5.75

Spring Wire, 2 cents per pound advance. Whitened Wire, 3 cents per pound advance. Flat, Square and Half-Round Wire, 4 cents advance on Round Wire. Fancy Wire, not less than 10 cents advance on Round Wire. Spooling on one-pound Spools, 12 cents per pound extra. Spooling on ten-pound

Spools or more. 2 cer	ats pe	r pound	extra		
MISCELLANEO	US !	TINNE	ERS'	STOCK	ĸ.
	Sold	ler.			
2 0 0 0 0 000 A B			44	M / M 40	-

14 & 16, Warrant	ed				15	B6 @	18 0
Extra					1	134 @	11360
No. 1 Refined					10	14 @	10120
No. 2 "					10	0	10544
Extra wiping					10	36 @	11 #
			ets.				
Iron and Tinned, In buik, new list,	new	list,	Dec.	10, 1	861	di	a. 40 ≰
Copper Rivets an	d Bu	PPS.				di	s. 50 s
Nos. 7 8	9				18		1
18 h 40¢ 50¢	50¢	54¢	56¢	58¢	604	65¢	70¢
	Sto	ve !	Bol	is.			
America - Ormani	W					30	- 00 -

#### FRENCH GLASS. Prices current per box of 50 square feet. List, September 8, 1884. Single Thick.

6 x 8 to 10 x 15	Sizes.	lst.	ad.	8d.	48h.
18 x 22 to 30 x 30	6 x 8 to 10 x 15	\$9.50	\$8.50	\$7.50	\$7.00
18 x 22 to 30 x 30			9.50	8.75	
15 x 36 to 24 x 30 . 14.00 12.75 11.00 12.50 11.75 12.75 13.00 12.50 11.75 12.75 13.00 12.50 12.50 12.55 12.			11.00	10,25	9.50
285 x 285 to 24 x 86.			12.75	11.00	
96 x 46 to 30 x 50		15.00	18,50	11.75	
30 x 56 to 30 x 54 .	26 x 36 to 26 x 44	16.00	14.50	12.25	
30 x 56 to 34 x 56   90.00   18.00   16.00   34 x 58 to 34 x 60   92.00   90.00   18.00   34 x 58 to 34 x 60   94.00   92.00   90.00	96 x 46 to 30 x 50	17.50	16.25	18.75	
34 x 58 to 34 x 60. 22.00 20.00 18.00 56 x 60 to 40 x 60. 24.00 22.00 20	30 x 52 to 30 x 54	19.00	17.00	15,00	
Double Thick:   Sizes.   1st.   2d.   3d.   4th.	30 x 56 to 34 x 56	20.00	18,00	16.00	
Double Thick.   Sizes.   1st.   2d.   8d.   4th.	34 x 58 to 34 x 60			18,00	
Sixes.         1st.         2d.         3d.         4th.           6 x 8 to 10 x 15.         \$12.00         \$10.75         \$10.00         \$9.00           11 x 14 to 16 x 24.         14.00         12.75         11.75         10.7           18 x 22 to 30 x 30.         17.00         15.50         11.75         10.7           15 x 36 to 24 x 30.         18.50         17.00         15.00         15.00           26 x 36 to 24 x 36.         20.00         18.00         16.00         26 x 36 to 36 x 44         21.25         19.75         17.00           26 x 46 to 50 x 50.         38.50         21.25         18.75         90.25         90.25         90.25         90.25           90 x 52 to 34 x 56.         26.00         34.50         22.25         90.25         34.50         22.25           34 x 58 to 34 x 60.         20.00         37.00         25.00         25.00         25.00	36 x 60 to 40 x 60	24.00	22,00	20,00	
6 x 8 to 10 x 15.	Double	Thick			
11 x 14 to 16 x 24	Sizes.	1st.	2d.	8d.	4th.
11 x 14 to 16 x 24	6 x 8 to 10 x 15	\$12.00	\$10.75	\$10,00	\$9,00
18 x 32 to 30 x 30 17.00 15.50 14.50 15 x 36 to 34 x 30 18.50 17.00 15.00 26 x 32 to 34 x 30 20 18.50 17.00 15.00 36 x 36 to 30 x 44 21.25 19.75 17.00 26 x 46 to 30 x 54 20 20 36 x 36 to 30 x 54 20 20 36 21.35 18.75 30 x 52 to 30 x 54 20 20 20 20 20 20 20 20 20 20 20 20 20					10.7
26 x 28 to 24 x 26 . 20,00 18,00 16,00 36 x 36 to 26 x 44 . 21,25 19,75 17,00 26 x 46 to 30 x 54 . 36,50 27,25 18,75 90 x 52 to 30 x 54 . 24,50 22,25 30,25 34 x 58 to 34 x 56 . 26,50 34,50 22,25 34 x 58 to 34 x 56 . 20,00 37,00 25,00		17.00	15.50	14.50	
96 x 36 to 39 x 44. 21.25 19.75 17.00 26 x 46 to 30 x 50. 38.50 21.35 16.75 90 x 52 to 30 x 54. 24.50 22.35 10.25 30.25 30 x 55 to 30 x 54. 26.00 34.60 22.35 34 x 58 to 34 x 56. 29.00 37.00 27.00 27.00 25.00	15 x 36 to 24 x 30	18.50	17.00		
26 x 46 to 30 x 50	26 x 28 to 24 x 36	20.00		16,00	
90 x 52 to 30 x 54	96 v 86 to 96 v 44				
90 x 56 to 34 x 56		21.25	19.75	17,00	
34 x 58 to 84 x 60 29.00 27.00 25.00	26 x 46 to 30 x 50	28,50			
	26 x 46 to 30 x 50	28,50 24,50	21.95 22.25	18.75 90.25	
36 x 00 to 40 x 00	96 x 46 to 30 x 50	28,50 24,50 26,50	21.25 22.25 94.50	18,75 90,25 22,25	
	26 x 46 to 30 x 50	28,50 24,50 26,50 29,00	21.25 22.25 34.50 27.00	18.75 90.25 22.35 25,00	

Sizes above—\$15 per box extra for every 5 inche All sizes above 5½ inches in length, and not mal-ing more than 81 united inches, will be charge in the 84 united inches bracket. An additional 1 per cent. will be charged for all Glass more than 6 inches wide. Discount 60 and 10 %.

#### PAPER STOCK, &c. (Dealers' Selling Prices.)

White Shirt Cuttings, No. 1. 7 7 6 73 No. 2 55 6 6 6 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
No. 2   516   6   6   6   6   6   6   6   6   6	
No. 2   516   6   6   6   6   6   6   6   6   6	ò
Mill Assorted Whites.         6         6         64           Unbleached Muslins.         5%         6         5%           City Whites, No. 1.         5         5         5%           New Canton Flannels.         5         6         5%	•
Unbleached Muslins. 5% 6 5 City Whites, No. 1 5 6 5 New Canton Flannels. 5 6 55	e
City Whites, No. 1	٠
New Canton Flannels 5 6 54	
New Canton Flanneis 0 @ 05	ķ.
	Ŀ
New Seconds, light 4 @ 45	Ū
" dark 314 @ 35	ε
No. 2 Whites	
Cotton Canvas 5 @ 54	ε
Linen Canvas No. 1 456 45	8
Seconds, City No. 1. 12 @ 18	1
Seconds, City No. 2 1 @ 15	Н
Colors, # cwt	٠
Manila Rope 3 @ 354	
Tarred 216 @ 25	ы
Commun December No. 1	
Gunny Bagging, No. 1 18 2 2 18 18 18 18 18 18	
No. 3 156 @ 159	П
Kentucky Bagging 4	Н
Burlap Bagging, No. 1 1% @ 2	П
Tar Shakings 14 @ 2	П
Hemp Twine Stock	-1
Hard White Shavings, No. 1	- 1
Soft White Shavings, No. 1 3 @ 31/4	E
White Shavings, No. 2, Soft 214 @ 834	П
Mixed Shavings, part White 94 @ 61	и

1	*	-
	Bogus Manilas and Hardwares. 34 @ Commons, ¥ 100 \$ 00 @ Binders' Board Cuttings. 54 @ Straw Board Cuttings, ¥ cwt. 70 @	70 1 75
l	PAINTS, OILS, &c.	
	Paints.	
	Biack, Lamp—Coach Painters'	134

0 %	Black, Lamp-Coach Painters' W B 32	SB 24
76		G 11
76	1 vory Drop, rair	03
	Black Point in oil kees &c assorted can	8. 11
	Blue, Prussian, fair to best	(a) 55
40	" " in oil45	@ 58
60	" Chinese dry	70
50	" Chinese dry	30
	Brown, Spanish	17
40	" Van Dyke10	0 12
9e	14 @ 18	@ 05
	10 Danie good 904 hea	25
)6.	" in oil good, 30¢; best	t. 35
	" Parls	214
w.	Brown	11/8
40		3
1%	Ground in oil, Bright Red	6546
	Red	512
27	Brown	379
33	Mineral Paints	@4
96		
an	Red Lead, American	7
	Red Lead, American	\$1.7
0¢	" in oilasst'd cans, 11¢; keg	18, 8
	Rose Pink 106 Sienna, American Raw, powdered.  Burnt, powdered 106 166 In oil 166	0 13
	Blenna, American Raw, powdered	414
0	Burnt, powdered	a 20
8.	" Raw	25
-	Umhor Burnt nowored	600 754
6		
8	" Raw, powdered	736
%	" " In oil	1 48
8	Vermilion, Chinese	450
	English	
8	White Lead American pure dry	61
	White Lead, American, pure dry in oil	64
×	White Paris, English Prime	2564
8	Yellow Ochre, French	11.78
8	" in oilasst'd cans, 11¢; keg	B, 86
8		
7	Yellow Chrome	254
- 1		
_	" No. 1, in oil	94
6	" French (Paris Dry)	a 8¢
6	" in oil10 @	110
.	Oils.	
	Lincood Waw in castes and bble MG	540
œ l	Linseed, Raw, in casks and bbls	574
21	Bleached Whale, # gal	
21	Sperm	1.08

	Fish Oil, Pressed
7	Neatsfoot
ě	Tallow
-	Empire Cylinder Oil
	Machinery4
0	Engine
3	Sundries.
L	Asphaltum, Cuban
t	" Egyptian9@10
Ł	Benzine P gal. 9 @ 10
i	Chalk
Н	" Rlock
5	Dryers, Patent Americanasst'd cans, w: Kegs, 7
3	Froatings
1	Glue, White24 ¥ 35
8	" Sheet
ы	Glaziers' Points, Zinc
И	Gum, Copal36
u	" Damar25
Н	" Sheliac, English40
П	" " dark
П	Litharge71
ч	Mineral Wool, ordinary, ₽ b1 @ 1%
ч	" extra3 @ 33
ч	Pumice Stone, selected Lumps
Н	powdered
u	Pine Tar, bbls
1	
1	Putty, in bladders3
-1	" in bulk

Sperm ....

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CORDAGE OF ALL KINDS. BINDER TWINE A SPECIALTY.

99

(Continued from page 29.)

and the more improved and economical heating of the blast. He exhibited drawings of a new hot-blast stove, now building. It is an iron-pipe stove, with 84 syphons and 12 lead pipes, having 55,000 square feet radiating surface. Mr. McArthur described the construction in detail, and stated that with the struction in detail, and stated that with the new stove he expected to get 1000° of temperature in passing air once through the stove, and 1500° when it was twice passed through. In the preparation of his ore he uses a modification of the Bradford washer, consisting of two cylinders working side by side, which have together a capacity of one t have together a capacity of 200 tons per day. The cylinders do not revolve in water troughs, but are supplied by means of pumps. Mr. McArthur claims a good economy and satisfactory results in operation, washing removing at least 10 per cent. of dirt from the With this apparatus he has been able to recover 30 or 40 tons of good ore a day from the dump where it had been thrown as

Mr. Geo. W. Colby described a new roast ing apparatus, a modification of the Wester-mann kiln, which had been built and used with much success at the Katahdin Iron Works, Maine, and at Port Leyden, N. Y.

Mr. Geo. Noble, of Anniston, Ala., gave an interesting description of his method of making charcoal from yellow pine in meilers, and exhibited a piece of carbonized wood of superior quality It had a metallic ring and great strength, and was considered by the speaker better than anything which could be

made in retorts or kilns.

Dr. H. M. Pierce described his experience at Elk Rapids, Mich., and a new plant near Nashville, Tenn., in making charcoal in ovens, and gave an account of some remarkable results which had attended the intro-duction of steam into the kilns during the process of carbonization. We hope at some future time to do fuller justice to his experiments than can be done in notes of his remarks at the meeting.

#### Wednesday's Excursion.

At 7 a. m. on Wednesday morning, October 1, the members and guests of the asso-ciation took a special train for a run through

ciation took a special train for a run through the iron district of Crawford County and other points in that region.

Arriving at the Midland Furnace, 7 miles from Cuba, a banner was seen moving overhead, with the greeting: "Southwest Missouri cordially greets the Charcoal Iron Workers' Association." The works of the Midland Blast Furnace Company were visited. Midland Blast Furnace Company were visited by the party. The furnace is on the Yadkin Creek, an affluent of the Meramec. Yadkin Creek, an affluent of the Meramec. It has a capacity of 45 tons daily. At this point cars were taken for a ride over the Cherry Valley Railroad, 7 miles, to the Cherry Valley mines. The trip was insufferably warm. Mr. Holman, of Mexico, said that at Durango, nearly under the equator, the sun at noonday, which is overhead, casting no shadow, and shining to the bottom of wells or feet deep it was never so bottom of wells 75 feet deep, it was never so hot as he found it in Missouri. Cherry Valley bank No. 1, on the summit of the elevation, is a deep pit, but not now worked. Bank No. 2 is at the foot of the hill, 1/2 mile distant. They have 75,000 tons now on stock, but are prosecuting work. The ore is red hematite, bright gray specular and brown surface ore. A large pit is excavated 50 feet or more below the surface, and a shaft has been sunk 75 feet, showing a rich body of ore beneath. There is a probability that a vein connects with No. I bank. Returning to Midland station, dinner was

repared in the grove overlooking the town. The repast finished, the party again embarked on board the special train and had a run of 23 miles, through Steelville, the county seat of Crawford County, to Salem, the county seat of Dent County, and in the right of the famous Simmons Mountain the county seat of Dent County, and in the vicinity of the famous Simmons Mountain, with its ore beds. Simmons Mountain is 128 miles from St. Louis, and has been worked for 10 years. It is said to contain one of the largest deposits of specular ore in the central ore region of Missouri. It is an isolated hill about 90 feet in elevation above the pleten scattle. the plateau south of Salin and covering 30 acres of ground. The main body of the hill is of second sandstone, which was found in pieces on the surface mixed with fragments of chert on the southern side near the base. It is supplied to the Sligo Furnace and some is shipped to the Midland Furnace, and until recently to St. Louis. The company is styled the Missouri Iron Company, of which A. L. Crawford, of Newcastle, Pa., is president. He is also president of the Sligo Furnace Company and president of the St. Louis, Salem and Little Rock Railroad. Some of the more adventurous went into the tunnel and brought away some specimens, espe-cially of ferruginous mud, on their shoes.

Having taken a view of this famous Missouri mine, the excursionists then gathered on the platform on the railroad track, where ey spent an hour awaiting the train from dem to back up and take them aboard. On the platform a sort of improvised meeting was held. Mr. King, of Virginia, made some appropriate remarks on this visit of the association to the great iron fields of Missouri, and concluded by moving a vote of thanks to Mr. W. H. Lee, of St. Louis, president of the association, for the able ously carried, followed motion was unanim Thanks were also voted to Mr T. J. Scott, in charge of the excursion, to souri Iron Company (Simmons iron mountain) had shipped up to the first of January

last 201,386 tons of ore, and the Cherry Valley mines, up to the same time, had shipped 166,926 tons. The trains, with all on board, left Salem about 6 p. m. and arrived in St. Louis about 1 o'clock the following morning, having been side-tracked and otherwise subjected to delays.

#### Thursday, October 2,

was a day given to rest and recreation. In the forenoon there was a short but interesting session, continuing the discussion of the

question of the economies of charcoal burning, started on Tuesday evening.

Mr. James Sterling, of Detroit, read a paper giving results of practical work with the Mathieu retorts at Port Leyden, N. Y., where their working has been in all respects. where their working has been in all respects

Mr. Davenport inquired whether in the carbonization of wood in retorts sufficient gas was had from the wood itself without drawing upon the blast furnace for gas needed to heat the blast. He did not find it so at St. Ignace Furnace, and he would never so at St. Ignace Furnace, and he would never have built a retort plant if he had supposed he should have had to run them with furnace gas. He understood that at Port Leydon blast-furnace gas was conveyed to the retorts in an 18-inch pipe; he had found a 20-inch plant necessary. He had a plant of 56 retorts, and his experience with them had been entirely unsatisfactory.

This led to a long and rather angry discussion, in which very positive statements were

sion, in which very positive statements were as positively contradicted. Mr. Davenport's nstruction and management of the retorts at St. Ignace was rather sharply criticised, and stoutly defended, but no conclusion was reached.

The Committee on Nominations reported the following names of gentlemen to fill the offices of the association for the ensuing

offices of the association for the ensuing year, and they were unanimously elected: President.—W. A. Miles, Copake, N. Y. Vice-Presidents.—W. N. McGregor, Ironton, Ohio; Percy Warner, Warner, Tenn.; E. W. Crichton, Oswego, Oregon.

Managers.—Orwin W. Davis, M. H. Robbins, W. H. H. Gere, Wm. Hoagland, W. M. Potts, W. W. Lobdell, C. E. Cofin, Willard Warner, A. G. West, John F. Dixon, Percy Warner, W. N. McGugin, J. N. White, Walter Russell, D. M. Sabin, Seymour Burnell, Egbert Judson, E. W. Crichton.

Friday, October 3.

The association was taken on a delightful excursion to Iron Mountain and Pilot Knob. The Iron Mountain was an criginal concession to the heirs of Francis Valle, and afterward confirmed by act of Congress. Mr. Conrad C. Ziegler, a former State Senator from Ste. Geneviève, took an active part in the organization of the Iron Mountain Company into a corporation, and he was the first practically to develop the iron mines. It belonged to the heirs of Valle when Ziegler took an interest in reorganizing the com-pany. From their commencement the company were heavily in debt up to the time of the war, then quite suddenly prices enhanced and they shipped largely to St. Louis. When the Iron Mountain road got into operation they shipped 1000 tons a day to St. Louis, at \$10 a ton, and paid \$1.90 a ton for transportation from the mine to St. Louis. The capital stock under Ziegler's administration was \$200,000. Now it is administration was \$200,000. Now it is \$3,600,000. It is one of the most valuable iron banks in the State. The surface when discovered was covered with a layer 20 feet thick of bowlders of ore, associated with ore pebbles and ore sand and but little clay. The ore mantle of detritus represented, according to Pumpelly, only a portion of the concentration. The excavations at the base of the hill show heavy stratified tion of the concentration. The excavations at the base of the hill show heavy stratified deposits of ore having exactly the same origin, and which was washed down the origin, and which was washed down the slope and concentrated by the waves of the silurian ocean. The smaller veins of the Iron Mountain contain apatite, which has been removed, leaving only the impressions of the crystals. The Iron Mountain rises about 250 feet above its base. It was stated that work continued and there were over 100,000 tons of ore in stock. Some is shipped to the Ohio River towns to be used as a

fix. The excursionists, after an inspection of the country, boarded the train and passed Pilot Knob, which stands uplifted on the of chert on the southern side near the base. Higher up it was found mixed with specular surface ore, while some of the surface on the slopes was altered into a brown hematic, but most of it was specular, the latter occurring in bowlders of a large size. The excavation consists of a cavity of immense extent, sunk to a depth of 100 feet below the surface, with a wall of discolored earth and sand rock surrounding the chasm. At the bottom of the great cavity a lead has been struck and a tunnel is being worked with a fall of 100 feet in 600, and the ore is drawn out with a wire rope attached to the cars and worked by steam power. It is said that over 500,000 tons of ore have been taken out in 10 years.

It is supplied to the Sligo Furnace and some left hand side, a famous landmark for the whole surrounding country. At Arcadia a left hand side, a famous landmark for the whole surrounding country. At Arcadia a left hand side, a famous landmark for the whole surrounding country. At Arcadia a left hand side, a famous landmark for the whole surrounding country. At Arcadia a left hand side, a famous landmark for the whole surrounding country. At Arcadia a left hand side, a famous landmark for the whole surrounding country. At Arcadia a left hand side, a famous landmark for the whole surrounding country. At Arcadia a left hand side, a famous landmark for the whole surrounding country. At Arcadia a left hand side, a famous landmark for the whole surrounding country. At Arcadia a left hand side, a famous landmark for the whole surrounding country. At Arcadia a left hand side, a famous landmark for the whole surrounding country. At Arcadia a left hand side, a famous landmark for the whole surrounding country. At Arcadia a left hand side, a famous landmark for the whole surrounding country. At Arcadia a left hand side, a famous landmark for the whole surrounding country. At Arcadia a left hand side, a famous landmark for the tunnel and load to take the number of blast funces, pudding furnaces, pudling furnaces, pudling furnace left hand side, a famous landmark for the Pilot Knob works were begun in November, 1848, under the management of C. C. Zeigler and E. F. Pratt. In 1848 E. Nead shipped metal from Iron Mountain to England, and the following spring received it back manufactured into razors and cutlery by Rodgers & Son, of Sheffield.

The party entered Tunnel No. 3 and passed through 4 mile, up some steep places, crossing Tunnel No. 2 and coming out at Tun-3, near the top of the knob. tunnel was lighted throughout with electric lights. The atmosphere was cold as a cel-lar, and several ascents as steep as a barn roof were made, which the ladies seemed to get up with less difficulty than the men. The knob is honeycombed with tunnels and drifts made within the past six years, but in consequence of the depression in the iron business no ore is now taken out.

The excursionists next visited the famous granite quarries, the train backing down some 4 miles for that purpose. The Syenite manner in which he presided and managed Granite Company, at Graniteville, are doing the details of the present excursion. The work, and about 10 carloads of paving stones are daily sent to St. Louis. Most of the party visited the gigantic granite bowlders—one of T. J. Scott, in charge of the excursion, to the members of the local committee, the railroad, &c. Mr. W. J. Sankey, late assistant superintendent of Simmons iron mountain, made the statement that the Missistant superintendent of simmons iron logical curiosities, and much credit is due destroyed. They are certainly great geo-logical curiosities, and much credit is due somebody for their preservation. These bowlders belong to the granite in place, and is another reservoir on Parker's Hill.

were never subjected to the action of the glacial period. The run to St. Louis was quickly made, the train arriving at 8 p. m.
On Saturday the association had a delight ful excursion by river to the Crystal Plate Glass Works, and in the evening were entertained at a banquet tendered them by the local members in St. Louis. The meeting was in all respects a delightful one, and but for the excessive heat would have been thoroughly enjoyable in every detail. As it was, nothing but the heat detracted from the

#### NEW PUBLICATIONS.

pleasure of the visiting members.

THE TARIFF ISSUE. By E. J. Donnell. Size. 7½ x 5 inches, 79 pages, pamphlet edition. Published by G. P. Putnam's Sons.

This pamphlet is the sixteenth of a series published by Putnam, entitled "Questions of the Day," the question dealt with, as in most of the others, being the tariff from a free-trade point of view. It would be a sufficient comment upon the nature of the majority of these pamphlets to note the names of the authors, among whom are David A. Wells, S. S. Cox, J. Schoenhof and other champions of unrestricted exchange less known to fame. Not content with advocating tariff reform, Mr. Donnell at the very outset takes occasion to cast a slur upon newspapers in general, and Bradstreet's in particular, whose grievous fault lay in refusing to publish—because of its length—an eleven-column letter of his in reply to a previous one by Mr. Mason. Mr. Donnell in this case, either from ignorance or other cause, evidently did not realize that in attacking Bradstreet's he was alienating a friend, and has made the serious mistake of so many of his co-workers, who are ready at the slightest provocation to jump at conclusions without regard to facts or consequences. After a few introductory remarks in the shape of a letter to his publishers, which contains the uncomplimentary allusions to the moral courage of newspapers, above referred to, Mr. Donnell proceeds to the refutation of Mr. Mason. Beginning with the harmful effects of the wool tariff, not mentioning, however, that the wool produc-tion of the United States has nearly trebled during the last 20 years, the author continues with a long account of the unhappy condition of things in this country, including condition of things in this country, including some rather amusing statements, such as that there has been no steady, genuine prosperity since the present high protective policy began; that tariff dwarfs manufacture and forces agriculture; that the standard of wages is lowered by tariff; that tariff only protects monopolies, and many others of a like nature, which affirmations he supports by either an inversion of cause and effect or else a reckless admixture of fact and fiction. Such generalities in the way of criticism Such generalities in the way of criticism may perhaps be considered too sweeping, but it is unnecessary to particularize where the merits of a book demand no severe

RYLAND'S IRON, STEEL AND ALLIED TRADES DIRECTORY, with Brands and Trade-Marks, 1884 Size, 11 x 7½ inches, 668 pages. Published by the Proprietors of the *fron Trade Circular* (Ry land's). Price, £1. 5/.

This volume is the second edition of Ryland's Directory, greatly enlarged, improved and brought down to date, the first dition having been published in 1881. The feature of the present issue is the allied trades section, embracing all the leading descriptions of iron and steel manufactures, which now for the first time supplement the information relating to the iron, steel and tin-plate branches. Great care, we are told, has been used to insure accuracy in this new. has been used to insure accuracy in this new section, and to confine the lists to bona fide manufacturers as distinguished from the large number of professed makers who are simply factors or agents for the goods they sell. A third section is devoted to iron, steel and tin-plate merchants and recognized agents. The information contained in the book includes the postal and telegraphic addresses of works, names of partners managing directors and others; addresses managing directors and others; addresses of branch offices and names of representatives; nearest railway station or stations; the description of iron, steel or tin plates made; the qualities of such goods; the number of blast furnaces, puddling furnaces, rolling mills, forges, trains, hammers, &c.; the capacity of works, and the brands and trade marks.

DICCIONARIO TECNOLOGICO INGLES-ESPANOL Y PANOL-INGLES. Por Nestor Ponce de Leon, l York, 40 and 42 Broadway.

This publication is timely and valuable. It furnishes, in Spanish and English, the correct technical terms for parts of machin-ery, &c., and, as our relations with Spanish America frequently render the use of such a book quite a desideratum, it is likely the work will have a ready sale. About half of the book, letters A to H, is ready for delivery.

Damage from a Broken Water-Pipe. Considerable damage and great inconvenience have occurred at Boston through the breaking of a large water-pipe on the 4th inst. Two iron bridges with stone abut-ments are being built over the Boston and Albany Railroad tracks at Brookline avenue. The main water-pipe which partly supplies the city with water had to be raised, and while in that position by some accident a large stone which was being raised slipped upon the pipe and broke it. Immediately a stream of water 15 feet high spouted out. Immediately a Before the water could be shut off it had made a breach 30 feet long in the main line of track, so that the entire four tracks, sleepers and road-hed at that point were washed completely away. The water in the city will have to be shut off, although there is another reservoir on Parker's Hill.

#### HARDWARE NOVELTIES.

#### The "Champion" Combination-Lock Cash Box.

The accompanying illustration represents a heavy Cash or Deed Box made by the Miller Lock Company, of Philadelphia. The box itself is of tin, well made and ornamentally finished, and presents no special features of novelty. But the peculiarity of this article novelty. But the pecuniarity of this article is that each box is secured by a self-locking combination, three-tumbler "Champion" lock, made by the Miller Lock Company, whose "Champion" drawer locks, made on the same principles, are described in another column. The dial of the lock, as represented in the cut, is large and legible,



Combination-Lock Cash The "Champion"

Box. and is handsomely nickel-plated. Each lock must be opened upon three of its dial num bers, which the owner may readily change making, as the manufacturers inform us, 50 different combinations by loosening or tight oning one screw. Concerning the security which is thus gained, they say that the chances of opening without previous knowledge of the combination do not exceed one in a million. This article is put on the market in view of the fact that most boxes of its class have locks of insignificant value, which are in most cases easily opened with a skele-ton key, but the manufacturers of this cash box offer it with confidence that it affords a high degree of security without the trouble of a key, and is thus a fit receptacle for papers or valuables that must be intrusted to another for safe-keeping. Information with reference to the prices on the different styles and sizes of boxes which are made will be found in our Trade columns

#### New Form of Can-Spout.

The accompanying illustration represents a Combined Brace, Spout and Breast for coal-oil cans, made from a single piece of metal, which is being offered to the trade by Parks & Co., No. 155 North Third street, Philadelphia. The improvement consists in making the spout and breast from one piece of metal, securing by this means a securior of metal, securing by this means a seamle



New Form of Can-Spout.

breast and spout. The construction makes these parts stronger than any other part of the can. Another advantage is the form of opening into the can, which is such that it drains from the base to the apex of the breast, thus preventing flowing over at the can-screw during the operation of filling lamps. Another advantage is that mucl greater pressure on the nozzle is obtained, thereby securing a free flow. We are ininformed that Messrs. Parks & Co. supply manufacturers with these can-breasts either with or without trimmings, also any or all parts of oil cans in knock-down shape or complete.

#### A New Scraper.

The cut below illustrates a new Scraper, manufactured by the Eclipse Plane Company, of Coshocton, Ohio. The invention consist in the combination of a metallic plane stock with the combination of a metamic plane stock, with the usual handles, with a scraping bit, and is so constructed that the bit can be placed at any desired angle or inclination with the plane throat. The devices for adjusting and securing the bit are very simple, and the various changes in inclination, as well as the removal and replacing bit, can be done or made in a moment. To the inner be done or made in a moment. To the inner side of each cheek or side piece, as shown in the illustration, is cut a semicircular shoulder in a radius with the throat from which the circle is struck. These cheeks which the circle is struck. These cheeks are connected with a threaded bolt, as shown, by which they may be slightly sprung together and thus clamp together the bracket or aliding segment holding the bit. This



A New Scraper.

segment rests upon the shoulders and is held in place in the semicircle mentioned, in which it travels, by a flange which forms the outer edge of the cheeks. The bit is inserted in the sliding segment and firmly held in position by a set-screw, as is shown. The depth of the cut can be gauged by the eye or by placing the scraper on a flat surface and gently pressing the bit against it; then tighten the bit set-screw, place bit at ings, chiefly for hydraulic rams and marine desired angle and secure the set-screw the side, and the scraper is ready for work. already turned out some dozens of ingots for For finishing all kinds of wood on which a scraper is used, finishing and trueing surfaces for the application of veneer, and for them have ranged up to 20 feet in length, dressing the veneering after it has been apwith an average diameter of 3 feet 6 inches. plied, the manufacturers claim that this These ingots have subsequently been ham-scraper cannot be excelled, and that it will mered to the requisite size, and then reduced do far more work in a given time with less to suit the purposes for which they were labor than other scrapers. They call atten- intended.

tion to the combination of the scraper with a stock similar to that used in the ordinary plane, as giving the operator all the advantages in getting at the work to be done that are found in the common plane, while, having no handles at the side, the mechanic is enabled to work with one or both hands, as he may desire. It is finished in two styles, japanned and full-nickeled.

#### An Improvement in Can-Screws.

The Willis Screw Top Company, of No. 347
River street, Troy, N. Y., have ready for
the market a new form of Screw Top which
possesses the important advantage of keeping the cap attached to the base at all times,
thus preventing the loss of the cap. The
accompanying illustration shows how this is
accomplished. The screw-cap does not differ
materially from the ordinary can screw oa materially from the ordinary can screw on the market. Below the thread, however, an annular groove is formed, and in this a wire is placed, encircling the cap and looped into

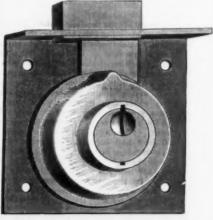


The Willis Can-Screw

a suitable fastening placed upon the base. The cap slips within the wire when being screwed on or off, and hangs suspended when the can is open. We understand that all ordinary sizes are being manufactured, adapted for use on kerosene cans and also on goods of a larger description, including druggists' and packers' tinware.

#### "Champion" Drawer Locks.

The Miller Lock Company, 821 Cherry street, Philadelphia, have placed upon the market some improved Drawer Locks, one of which is represented in the illustration given herewith. The locks contain circular tumblers or disks, and are adapted to the use of a small flat key. They are known under the general name of "Champion" locks, and are the invention of Milton Jackson, the manager of the Miller Lock Company. We have only space in this connection to illustrate one of the new locks, but it is typical of the entire assortment, so far as its leading features are concerned. The inner cylinder of these locks is shaped like a thimble, with the open end toward the key-hole. The cylinder carries a dog that in locking enters the tumblers inside the cylinder, and in unlocking is forced into a recess formed in the outer shell. The extra security afforded by this lock cylthe disks without the use of the proper key, so that their notches shall be in line under the dog. The arrangement is such that no motion or strain on the bolts or of any other part can in any way aid in locating the notches. Should any notch



Champion" Flat-Key Drawer Lock, Made by the Miller Lock Co.

chance to be placed properly, it would be displaced by movements that are necessary to locate the others. In short, the manufacturers claim that the processes by which other locks are readily picked always fail when applied to this lock. A further advantage claimed is the absence of all springs save one. The "Champion" lock cylinder as above described in readily advantage to the control of readily advantage to the control of the co Although the last patent of locks. device bears date within the present year, the manufacturers have already in the market quite a list, among which may be mentioned locks for drawers and closets, locks for chests and desks, and also locks for post-office boxes, and for safe-deposit boxes. All of these embody the features which we have described. In addition to the particulars already presented, an important advantage claimed for these locks is the application of a master-key to an extent far beyond what has been accomplished in other locks. Having a rotary disk or tumbler, the "Champion" lock readily admits of a very wide range of combinations and at the same time of a special combination to fit the master-The manufacturers state that one master-key may control an entire set which may be variously used for drawers, closets, desks and a night latch, thus greatly relieving the proprietor of an establishment of a cumbrous pocketful of keys.

For some time past I. & W. Beadmore, Glasgow, have been engaged in the produc-tion of some very large Siemens-steel castengine and propeller shafting. such purposes, generally ranging in weight from 25 tons up to 34 tons. The largest of

#### Industrial Education

A very complete summary of the progres being made in mechanical training in is contained in the second report of the Royal Commission on Technical Instruction, lately issued in London. The first volume, of over issued in London. The first volume, of over 500 pages, contains the report itself, dealing with the details of the technical schools on the Continent and in England; the second volume gives the report of the experts on agricultural and industrial schools in England and the United States, and three other rolumes contain the evidence of witnesses and other important documents bearing on the subject. A careful reading of the information here brought together will serve to instruct those concerned in this weighty matter. There are many suggestions calculated to prevent repetition of errors made elsewhere, while the active co-operation of trades and industries through their best representatives is shown to be more effective than any merely official supervision. It is of value to see how France suffers for the of value to see how France suffers for the want of good chemical training, such as is now supplied in Germany and England, as an efficient factor in so many branches of manufacturing. Then, again, it is well to meet the objection of oversupply. By the observation of the Royal Commission it appears that where there were in Germany 1000 civil engineers without employment, there were also 4060 lawyers without clients. Then, too, it is pointed out that in Berlin, where \$2,500,000 were spent on an Berlin, where \$2,500,000 were spent on an industrial school, the classes had diminished, but that those in towns where there were large local industries had grown, because employment was readily found in them.

The question of industrial education has ceased to be a matter of argument, for its advantages are now universally recognized, and what is wanted is exact information as to how it is best to be introduced in existing schools. Thus, in Germany again, with its 35,000 students in 40 universities, the learned professions are overstocked, but its industries have grown largely, owing to the superior training of those employed in them. The great business of manufacturing colors and dyes is essentially the outgrowth of science practically applied to the arts, and in one establishment there are 50 scientific chemists, 50 trained foremen and 1400 other workingmen. Abroad as well as at home industrial men. Abroad as well as at home industrial training is coming in to replace the system of apprentices, and with good results both for employers and employed. An interesting glimpse of the homes of workingmen abroad is given in the description of the much-praised Workmen's City, in Mulhouse, where there are 1000 or more dwellings, bought and there are 1000 or more dwellings, bought and paid for on installments running through a period of 15 years, at an average cost of about \$800. Each has a cellar divided into three rooms, and three rooms on each of the two floors above; but the bedrooms are badly lighted, the stairs mere step-ladders, and the drainage bad; yet this town is a paradise compared to some homes of foreign workmen. Then, too, the theory has run wild in Germany, with its shipbuilding school in Berlin, miles away from shops or the sea, and with schools for from shops or the sea, and with schools for the highest branches of technical training, big enough for 6000 pupils and only 2000 in them. On the other band, in England the technical schools have grown out of the actual needs of the leading industries, and the great London guilds and the provincial industrial centers have set to work to supply just such training as is needed to actual workmen at sums within their reach. Weaving and dyeing schools and mechanical ing and dyeing schools and mechanical laboratories are growing up where they are wanted, and schoolboards are introducing manual instruction in the use of tools in elementary schools as part of primary education for those who are to earn their living by work. Training colleges for teachers, in by work. Training colleges for teachers, in which they shall learn enough of science and art to give some instruction in their useful application; more practical work and less mere book-learning; public libraries and museums for popular use; compulsory education as a condition of the employment of children, are among the recommendations that result from this elaborate investigation of the present and the future needs of a thorough system of industrial education. thorough system of industrial education.

A Popular Employer.—On the 22d ult. Mr. A. B. Farquhar, proprietor of the Pennsylvania Agricultural Works, at York, Pa., returned from an extensive European tour, and, according to the York Daily, his workmen gave him a very enthusiastic reception that evening. They marched in procession from the works to his residence, carrying Chinese lanterns, torches and banners. An address was made to Mr. Farquhar on beaddress was made to Mr. Farquhar on behalf of the workmen, to which he responded in fitting terms, expressing his pleasure in being permitted to return to them and to receive the assurance of their regard for him. A bountiful collation was an agreeable conclusion of the exchange of courtesies.

Decisions in Customs Cases -The folfollowing decisions were rendered by the Treasury Department in customs cases during the past week: I. The value of tin cans containing chloride of lime or bleaching powder, not of an unusual character, are not to be included in the dutiable value. 2. Bituminous coal used on board enrolled and licensed steam vessels, plying in interior waters of the United States, is entitled to drawback under Decision 6079.

An English exchange says: "A contract for £80,000 worth of steel rails has been given by the Government to a foreign firm. Of this sum upward of £50,000 means wages, which are to be earned by foreign while English working. wages, workingmen, while English workingmen are straving. All the postal cards used in England are made abroad. Let the Engworkingmen remember all this.

Last year the Governments of Belgium Bra zil, Spain, France, Gautemala, Italy, Holland, Portugal, Salvador, Servia and Switzerland constituted themselves into a union for the constituted themselves into a union for the protection of industrial property, the United States refusing to join because of interference with our present system of patent laws. This year the English Government became a party to the same arrangement,

which provides that the subjects or citizens of each State shall in all other States of the uuion, as regards patents, industrial designs or models, trade-marks and trade-names, enjoy the same advantages that their re-spective laws now grant or shall hereafter grant to their own subjects or citizens.

At Youngstown, Ohio, on the 2d inst., occurred the death of J. M. Ronnell, of the firm of Bonnell, Botsford & Co., and a partner in the Mahoning Valley Iron Company. Mr. Bonnell was born in England, and came to America about 20 years ago. He was well known in the West in the iron trade, and was at one time a member of the firm of Hale, Cleveland & Bonnell, of Chicago. He was 36 years old, and leaves a wife and three children.

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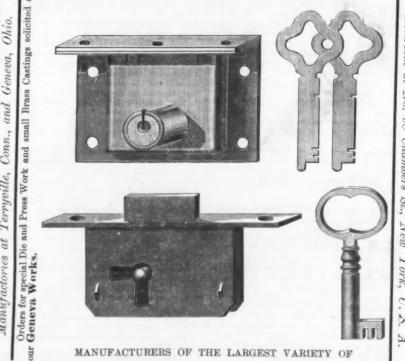


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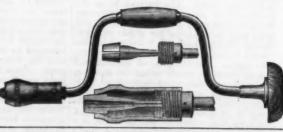
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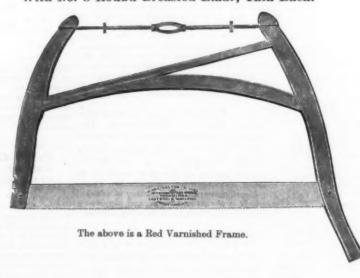
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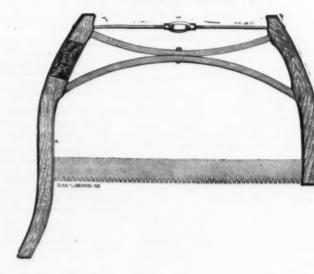
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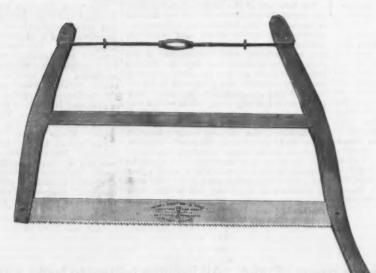


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#### CONSTRUCTION AND MATE-RIALS.

Carpentry and Joinery. Chiefly com-posed from the standard work of Thomas Tredgold, with additions posed from the standard work of Thomas Tredgold, with additions from the works of recent authorities, and containing a treatise on joinery. By E. W. Tarn; 300 pages, 4 by 7 inches, illustrated, cloth, \$1.40. Atlas of plates to the above, with descriptive letterpress, 35 plates, quarto, \$2.40. Price of Manual and Atlas. \$3.80 press, 35 plates, quarto, \$2.40. Price of Manual and Atlas. .\$3.80

To those who are acquainted with the standard work on Carpentry and Joinery by Tredgold, little more needs to be said in de-scription of the above work than that it is a cheap edition, somewhat abbreviated, of the larger work. The additions mentioned in the title are important, and render the work very desirable as a text-book and a book of reference. The work puts in a practical shape the best ideas of the standard authorities in carpentry and joinery. The charter shape the best ideas of the standard author-ties in carpentry and joinery. The chapter on joinery describes English rather than American practice, but nevertheless will be found valuable to American readers.

American House Carpenter. By R. G. Hatfield; 685 pages, 46 by

inches, 450 illustrations, cloth . \$5 The first part of this book, embracing some 300 pages, is architectural and mechanical in character. The divisions are architecture, in character. The divisions are architecture, construction, stairs, doors and windows, moldings and cornices. Approved construction is presented, with illustrations of the principles upon which they depend. Strains and thrusts, and the best means of providing necessary strength, are presented in an intelligent and comprehensive manner. Simple formula is freely used, but in such a way as to make its presence no disadvantage to the book. The second part is mathematical in character, the subjects being geometry, ratio and proportion, fractions, algebra, polygons, circle, ellipse, parabola, trigonometry, drawing and shadows. An appendix contains a glossary, tables of squares, cubes, &c., and a comprehensive index. The work is standard in character, and is alike valuable to the architect, engineer and common mechanic.

A complete and comprehensive guide to every description of constructive and decorative work, especially adapted to the amateur rative work, especially adapted to the amateur artisan and apprentice. Valuable, for reference, to the carpenter and builder. In three parts: I. Household Carpentry and Joining. II. Ornamental and Constructive Carpentry. III. Household Building Art and Practice. Containing practical suggestions and directions as to tools and their uses, cabinet work, masonry, bricklaying, plastering, painting, paper hanging, plumbing, &c.

Practical Treatise on Limes, Hydraulic Cements and Mortars. By Q. A. Gillmore, A. M; revised and enlarged, 334 pages, 6 by 9 inches, illustrated, cloth. . . . . \$4.

General Gillmore is the acknowledged authority upon the subjects treated in this work. The experiments and researches which furnish the groundwork for all the which furnish the groundwork for all the original matter contained in the work were conducted under the authority of the Engineers' Bureau of the War Department, and were completed in the summer of 1861. The subjects are considered in all their bearings. The geographical and geological localities of hydraulic cements in some parts of the United States, manufacture of cements from different materials and under different circumstances, and the test of cements, are precumstances, and the test of cements, are pre-sented in a thorough manner. The uses of cements and mortars are also considered, making the book a valuable one to masons, plasterers, &c.

Fryer.—Architectural Ironwork, By W. I. Fryer; with numerous il-

### MISCELLANEOUS.

Baldwin.—Steam Heating for Buildings. By Wm. J. Baldwin; 4th edition, with many illus. plates, 234 pages, 12mo, cioth . \$2.50

Plumbing. By W. P. Buchan; 4th edition, revised and enlarged, about 330 illustrations, 307 pages, 4 by 7 inches, cloth . . \$1.40 A handy text-book for the apprentice plumber, giving the details of his trade, including explanations of flushings, gutters, waste and scil pipes. There are also chapters on scientific and safe water-closets and an improved system of drainage.

Bayles .- House Drainage and Water Service. By James C. Bayles; 5th edition, 3 folding plates and 30 illustrations, 365 pages, 8vo. cloth

This work discusses the subject of house drainage and water service in cities, villages and rural neighborhoods in a manner in-structive alike to architects, mechanics and structive alike to architects, mechanics and house owners. The best forms of plumbing practice are described and illustrated, and the principles upon which good work depends explained. The book is of practical value to the building trades and all interested in the mechanics of hygiene. The contents are as follows: Hygiene in its practical relations to health. Sawar cass. Waste and coll pipes. to health. Sewer gas. Waste and soil pipes. Traps and seals and the ventilation of soil pipes. Water closets. Service pipes and water service in city houses. Tanks and cisterns. The chemistry of plumbing. Ele-mentary hydraulics applicable to plumbing work. Sanitary construction and drainage of country houses. Water supply in country districts. Suggestions concerning the sani-tary care of premises. The plumber and his

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### English Letter.

(From Our Regular Correspondent.) LONDON, September 22, 1884. THE OUTLOOK

is once more believed to be a shade brighter is once more believed to be a shade brighter in some quarters, but, so far as actual records have been in question, the improvement cannot be said to have presented any features of real vitality. That some branches of thelhardware industries are in receipt of better orders is beyond question, seeing that many concerns at Sheffield, Birmingham and a few other large centers have become visibly busier within the past fortnight. The summer has been so greatly prolonged (over 83° having been registered last week) that many having been registered last week) that many repeat orders have come to hand for travel-ing trunks, dinner plated ware and other articles largely used at the health and pleas-ure resorts. These places have all done so well this year that they are beginning to buy more freely of lamps, chandeliers, stoves and other winter fittings than usual, their orders being at present among the earliest and best booked by the manufacturers. From the rural districts come fairly good accounts of the doings of the "drummers," who are endeavoring to reap the outcome of the harvest on behalf of their employers. the harvest on behalf of their employers. The ironmongers of the market towns are buying in better fashion, and are taking superior grades of goods to those of the past few years, thereby affording proofs of the ameliorated condition of the people who depend upon them for supplies of hardware of all sorts. Scotland is also yielding a satisfactory amount of support to the general industries already spoken of, the remarkably fine and open weather being markably fine and open weather being exactly what was needed to facilitate the safe ingathering of the late crops of the Highlands and North of Scotland—where wheat, oats, barley, &c., are rarely harvested prior to the end of September, and occasionally very near to Christmas. Ireland, all things considered, is buying on a fairly good scale, the exceptionally dry and hot summer having been of peculiar value to the sister island, which is specially liable to have its crops spoiled by persistent wet. Some houses, indeed, find Ireland their best customer, and have done so for two or three years past, the "no-rent" movement having enabled the peasantry to expend their cash in any direction save for the benefit of the landowner. landowners. Lastly, we have London, which, with its population of nearly, or quite, 5,000,000, is of superlative importance as a market for all classes of our manufacturers. Reports from certain our manufacturers. Reports from certain classes of tradesmen in the metropolis are still couched in pessimistic tones. They deplore a comparatively poor "high" season—that is, from April to July—owing to the death of the Duke of Albany, but hope that the late autumn and winter may make up to some extent for what has been missed hitherto. So far the wealthier classes are still in the country or touring, but the first cold snap will send them back wholesale, and, in any case, Parliament will reopen toward the end of October, and will needs bring back all the members of both Houses for the anticipated exciting debates on the for the anticipated exciting debates on the franchise question. In the city proper some of the merchants and large middlemen speak in rather more hopeful terms of the situa-tion and prospects. They have rather better news from the Australian Colonies and New Zealand, and think there would be a marked change for the better were it not for the French operations in the East and the cholera in the South of Europe. Even as it is they are not so despondent as they were some time ago, and are inclined to the belief that the year will wind up fairly well. It will thus be seen that, on the whole, there is a little more animation in business circles, and that we seem to have a glimpse of a brighter future. The changes of the moment are not great, but they hold out the hope of better things to come before long.

THE INSTITUTE MEETING. To-morrow the autumn meeting of the Iron and Steel Institute will be opened at Chester, instead of at Sheffield, as was originally proposed. There is likely to be a good already made known their intentions of being present. At Chester itself there is little of purely trade interest to be seen, but the city is extremely quaint in many respects, its walls being the most perfect in this country. It is also a good center for excursions, being the great railway station for departures to North Wales and its beautiful scenery. The great works of the London and North Western Railway Company, at Crewe, where some good men are em-ployed, are to be visited, and will be found to present many features of interest, as also will the works of Lloyds Testing Company (for chains, cables, &c.,) and several local iron or engineering establishments. Liver-pool and Birkenhead are also within easy distance, and the salt mines of Droitwich &c., may be visited by those whose tastes lie in that direction. Of the literature of the meeting I need not say much here, as you will receive copies of the papers, but I ven-ture to predict that Mr. Henry Seebohm's discourse on the manufacture of crucible steel will attract the lion's share of attention. It is a well-done paper all round, and gives a capital resumé of the industry, while at the same time presenting much food for thought to those who have endeavored to work in this branch by the light of modern science instead of exclusively by the old rule-of-thumb method. Mr. Seebohm seems to hint that the chemists know very little indeed about steel, and defends Sheffield from the sneers of those who seek to show that the crucible-steel makers are behind the age. He dwells upon the localization of the tra at Sheffield, and, somewhat singularly, omits to do justice to the efforts and successes of the American manufacturers, although I happen to know (entre nous) that he has the highest opinion of the skill of certain manufacturers not a thousand miles from Pittsburgh. This omission may be, and no doubt is, unintentional, for the author of the paper is a cosmopolitan, and is ufactured iron are weak, and to secure orthoroughly independent of small local prejudices; besides which he is well aware that some of the American steel houses use a momentary well is half a mile distant from their well business, Oliver Bros. & Phillips have notified their employees of a reduction of 12½ ary lull in buying, though recent quota-

conclusion.

"Old hands" in the iron, steel and engineering trades often declare that companies on the "limited liability" principle have been and are certain to be the ruin of these industries. The shareholders are mostly persons having no knowledge of the trades in which they thus embark, and the amounts they individually invest are gener-ally placed as a speculation. They are in the power of two or three gentlemen who are originally sanguine of success, and during good times large dividends are often paid. When the pinch of adversity comes they feel it severely, the lack of personal interest, concentrated management and diverse views rendering them less stable than private undertakings. They plunge wildly, and recklessly seek to minimize their losses by extending their means of produc-tion out of all proportion to the legitimate wants of the trade at large. These reflec-tions are suggested by the reports of several limited companies, recently issued, although I do not intend them to have any special or direct reference to the concerns to which ! am about to allude. The report of the Monk-land Iron Company, however, has un-doubtedly been much discussed, and is a case in point to the extent that the directors confess that they have made heavy losses, owing to the low prices of iron. The report is as under: "The balance at the debit of revenue account, which last year amounted to £20,691, is now £46,861, showing a loss for the year of £26,170. Investigations into the cause of this loss have been made by the directors and the only explanation they can give of it is the low price of pig iron during the year. Is the low price or pig iron during the year.
Under these circumstances the directors
have seriously considered the position of the
company, and have come to the conclusion
that the only course open to them is to stop
the production of ironstone and such coal as
cannot be sold at a profit, and, meantime, to
work up the redundant stock of ironstone and convert it into money. Besides, the directors mean to make an earnest appeal to the owners of the minerals for a concession of the fixed rents for one year, as well as a large reduction in the royalties for years to come. These royalties amount on a ton of pig iron, worth 41/6, to no less than 7/ \$\mathbb{P}\$ ton, while the railway companies receive in carriage 8/6 on every ton of iron made. A very considerable reduction in royalties and carrying rates is therefore cessary if G.M.B. iron is to be made in necessary if G.M.B. from is to be made in this country. The outlay on capital account during the year has again been heavy, but this outlay has been mainly made to obtain increased outputs, and so diminish costs. In order, as far as they can, to mitigate the loss, the directors have abstained from

charging the fee of £1000 to which they are entitled under the articles."

It is only fair to say that the present directors are new to the management, but the inference is that some of the other blastfurnace owners must be also in a bad way There are other companies who are paying no dividends this half-year, and at some of them—such as the Sheepbridge Company, which used to pay splendid dividends—the managers and directors are having unpleas ant interviews with the shareholders, who had not a word to say so long as the re

turns were good. THE IRON MARKET

is somewhat disappointing, and were it not that the shipping season is now at its hight, and shipments in consequence not unsatisfactory, it is to be feared that the position would be regarded by the much-suffering producer as almost helpless. Prices have now sunk to a very low level indeed, and ironmasters must occasionally regret the absence of the lively speculator, who, if he sence of the lively speculator, who, if he does no other good, is sometimes the medium of forcing up prices. But every branch of the market now is dull, though it must be said the Scotch market is the most hopeful. As regards that market, however, allowance must be made for the temporary firmness created by the Monkland Iron Company's report. The directors of that company have, it appears, been selling iron without profit, and now have resolved on withdrawing that boon to purchasers and insisting on better prices for the future. The resolve is a wise one, as far as the company is concerned, but it is hardly likely to produce any effect, seeing how much production is still in excess of requirements, whether at home or abroad. The market has, either from this or some other cause, shown greater firmness during the past few days, and warrants have been in fair request at about 41/10 @ 42/, cash. Shipments reach a good total, owing, no doubt, to the cause already mentioned, and special brands, some of which are reported to be scarce, have risen, in instances as much as 2/ 79 ton. The Middlesboro' market is characterized by a slightly improved tone, which seems to be due not so much, perhaps, to more inquiries as to the greater firmness reported from The business done basis of 36/41/2 for No. 3, and 33/6 for No. 4 forge. Pig-iron shipments are satisfactory, Germany and Scotland being two excellent customers. Manufacturers having, unlike and the third for tempering the manufactured Scotch brethren, been fairly met by the local railway companies in the matter of carriage rates, are now striving to obtain further relief by a reduction in wages, though it is to be feared their view, so far the glory hole, containing six openings, is from commending itself to the other side will be strongly resisted. At the finished-iron works employment is irregular, but for bar iron of the best grades there is a fairly steady demand. In the engineering shops less activity is apparent, and the orders in hand, unless they happen to be specialties, are not of much importance. Prices of man-

exactly the same mixtures as some of the best Sheffield concerns, and do so with conspicuous and unvarying success. In alluding to the meeting not being held at Sheffield, Mr. Seebohm remarked that the Sheffielders felt that they must guard their little mechanical devices, &c., by keeping them strict secrets—a course of action which they felt was far safer and more politic than to seek the doubtful protection of the patent laws. I believe many excellent business men have of late came to the same conclusion.

"LIMITED" COMPANIES.

tions are stated to be well maintained. Sheet-makers have little reason to complain of the absence of specifications, being now so busy as to be able to impose a premium of 5/a ton on early deliveries. Leading makers quote singles, £7. 1/ @ £7. 5/; doubles, £7. 10/ @ £7. 1/ @ £7. 5/; and trebles an extra, £1. 1/. In gas-strip finds buyers at £5. 15/and upward; good bedstead tube strip, £7. 10/, and steel-nail strip, £7. 5/ @ £7. 10/. Old rails are very dull. Stocks in dealers' hands continue light, as our railway companies are not free sellers at the low rates now ruling. not free sellers at the low rates now ruling. In iron rails there is nothing doing, nor, it may be added, is there any likelihood of an improvement. Heavy wrought scrap iron is quiet at 43/@44/#? ton, f.o.b. London, &c., weights to be checked and quality approved at time of shipments. Of crop ends there are very few in stock, the short make of rails naturally reducing the supply.

SCOTCH PIG IRON

has undergone an improvement since my last, a change which is understood to be partly owing to better inquiries for ship-ments abroad, and partly owing to the re-solve of the Monkland Company to revise prices. In warrants a considerable turn-over has been done at prices up to about 42/, while special brands have further stiffened to the extent of 1/@2/\$\frac{2}{16}\$ ton. There are now 94 furnaces at work in Scotland, as against 115 a year ago, 7 being now on hematite and 1 on silicious pig, leaving 86 on ordinary pigs. Shipments were compara-tively 2856 tons better last week, but the total decrease to date this year has been 65, 125 tons, most of which has arisen in respec of lots to foreign destinations, Middlesboro' pig iron importations into Scotland have decreased by 6702 tons. In Connal's stores there are now 584,237 tons, against 586,617 tons a year ago, last week's decrease having been 530 tons.

### INDUSTRIAL ITEMS.

NEW HAMPSHIRE.

The Jenning Machine Company held their annual meeting in Nashua and have elected the following board of directors: William A. Russell, Lawrence; Thomas S. Newell, Charles T. Fairbans, Edward L. Chaffee, Boston; Samuel L. Sprague, John A. Brown, Providence, R. I.; Henry N. Bigelow, Clinon, Mass.

MASSACHUSETTS.

The Cunningham Iron Works, Boston, have closed a contract with the commissioners of the town of Weymouth to build a reservoir 40 feet in diameter by 62 feet high, this being the largest of the kind in the New England States. It will be constructed of refined boiler-plate iron, with a tensile strain of 50,000 per square inch, and to weigh when completed 113 tons. They have also contracted with the Brush Electric Lighting Company for three 72-inch steel boilers for their new station on Ferdinand street, Boston.

It is said that all the manufacturing es tablishments at Chicopee Falls, in whose products iron and steel form a part, will reduce hours of labor from ten to eight. It is occasioned by overproduction, and is the first of any importance since 1873, when the movement was not so general. The concerns which take up with the new order of things are the Lamb Knitting Machine and Massachusetts Arms Company, Belcher & Taylor Tool Company, J. Stevens & Co. Rifle Company, Chicopee Falls screw shops, and the Page & Blake needle works.

A new company, known as the Eureka Axle Company, have recently been estab-lished in Lynn, and are said to promise well. The company start with a capital of \$500, 000, divided into 50,000 shares.

CONNECTICUT.

Kent Furnace is out of blast, rebuilding. PENNSYLVANIA.

The employees at Dunbar Furnace, Fayette County, have refused to accept a reduc tion of 10 per cent. in wages, taking effect October 1, and a strike will likely ensue.

Cofrode & Saylor, of the Pottstown Bridge Works, have announced a reduction of 20 per cent. in the wages of their employees. This brings the wages of the laborers down to \$1.04 per day.

Wampum Furnace, a number of tenement houses and 202 acres of land were sold by Sheriff Douds, of Lawrence County, last week, for the sum of \$76. The property was subject to a mortgage of between \$50,-000 and \$60,000.

It is the intention of the Bethlehem Iron Company to extend the eastern end of their new mill several hundred feet, which will greatly facilitate their work. The extension will be built of iron. Only four blast fur-naces are in operation, but the indications are that an additional furnace will soon be

The Reading Artistic Glass Works will go into operation this week. The building and the furnaces having been finished, fire was built in the furnaces on October 2 to remove the moisture, and a trial of the glass furnace was to be made either on Monday or Tuesday of this week, and the whole works will soon be in operation. The building is 65 feet square, two stories in hight and surmounted by a mansard roof. There are three furnaces, one for making glass from sand and chemicals, another for the manu-facture of colored articles from the glass, It has a capacity of 1500 pounds of glass every 24 hours. It contains five crucibles. The glory hole, containing six openings, is the furnace where the glass-blowers will work in the manufacture of useful and ornamental articles. The tempering furnace is 40 feet long. Some 30 hands will be employed in the glass works.

The Bridgewater Gas Company, of Beaver County, struck a second big well in Hope-well Township, on September 30. The new as that in Well No. 1, which has a pressure of 500 pounds to the inch in 6-inch pipes. This new well, with the one they had before, will, it is estimated, be sufficient to furnish fuel and light for every factory and dwelling in Beaver County.

The success of the Babcock & Wilcox water-tube boilers using blast-furnace waste gas as fuel at the Lucy Furnaces, Pittsburgh, is leading to other trade in this direction. Sales have recently been made to blast fur-Sales have recently been made to blast furnaces as follows: Pottsville Iron and Steel Company, Pottsville, Pa., 150 horse-power; Woodward Iron Company, Wheeling, Ala., 292 horse-power; McCormick & Co., Harrisburg, Pa.; Paxton Furnaces, 416 horse-power; Lochiel Rolling Mill Company, Harrisburg, Pa., 416 horse-power; total, 1274 horse-power. Within the last 60 days other sales of boilers have been made by the Bab-čock & Wilcox Company to the extent of 5278 horse-power, making a grand total, with the above, of 6552 horse-power.

The Hartman Steel Company, of Beaver Falls, deny in toto the statement recently made in these columns to the effect that they had presented to their workmen for signature an ironclad oath binding them to have no further dealings with the Amalgamated Association, but that they had afterward withdrawn it. The company further say they have had no trouble with their men since August 1, everything working smoothly Out of about 140 strikers but 12 were permitted to return to work on any conditions. and most of the others are asking to be reemployed.

The following paragraph, which is going the rounds of the press as an Associated Press dispatch from Easton, is pronounced incorrect in almost every particular by the parties concerned: "The Glendon Iron Com-pany have been idle for the past two months on account of the general depression in the iron trade. It is now nearly ready to blow in its No. 5 Furnace, and another furnace at the works is being lined and will be blown in as soon as everything about it can be placed in running order. Stack No. 3, which has been running for several years, will be blown out for repairs as soon as the fires are lighted in the idle furnaces. No steps have been taken by the company to start their furnace in South Easton, and, as no coal boats have been unloaded there this summer, it is likely that the stack will be idle all winter. This furnace was blown out idle all winter. This furnace was blown out last spring. The Andover Iron Company, in Phillipsburg, have blown out the last furnace they had in blast, and according to the present outlook all the stacks at the works will be idle this winter." We reproduce this item and make the statement concerning it, because there are a many false new items. cause there are so many false news items now being circulated about iron works that it is well to know that most of them are sensational and not based upon actual facts, notwithstanding an apparent wealth of details which makes them seem to be true.

The Spring City Bloom Works, which went into operation a few days ago, are running very successfully. The machinery and smelting furnaces work admirably, and the blooms manufactured are of an excellent quality of iron.

The nail factory of the E. & G. Brooke Iron Company, of Birdsboro, manufactured during September 19,320 kegs of "Anchor" brand nails, an output which, in consideration of several days' stoppage of the works, evidences the large productive power of the factors. factory.

It is understood that the puddle mill of the Allentown Rolling Mill will resume oper-ations next week, after having been idle for three month

PITTSBURGH AND VICINITY.

The firm of Breed & Edwards, plow manufacturers, whose place of business is at the corner of Penn avenue and Water street, ss is at the made an assignment on October 2 to Ogden M. Edwards, Pittsburgh. No records of indebtedness are made, and no exemptions are entered up, but Mr. Breed states that the firm will be able to meet all of their obligations. The liabilities are said to be about \$75,000, while it is claimed the nominal ets are over \$100,000. The direct cause of the suspension was the inability of the firm to meet matured paper on which no extension could be obtained. It is claimed that the firm have not over half a dozen creditors, the largest, it is understood, being William Thaw, father-in-law of Mr. Edwards, Eastern manager of the Union line. Mr. Breed says he loses everything he has by the collapse.

Abel, Smith & Co. are preparing to rebuild their glass-house.

The Black gas well, at McKeesport, is being cased and the surface gas all shut off. This well is a test one, and, if gas exists in paying quantities, others will probably find it, as a number of other wells are being put down near the Black Well.

A strong flow of gas has been struck at the well of J. Painter & Sons, on the South

One of the nail rolls in the mill of Shoen berger & Co.'s broke on September 29, caus-ing a temporary cessation of work.

The Westinghouse Gas Company have made a contract for pipe with the Penn-sylvania Tube Works to lay a main from the Butler and Tarentum gas district. The contract calls for the delivery of 3 miles of pipe daily, the delivery to commence on Monday when the digging of trenches and lay ing of pipe to the city will be commenced and ished to completion

Mr. Alexander Bradley has consented to serve as umpire for the new Coal Trade Tribunal. The board is now ready for

Dilworth, Porter & Co. have asked their employees to accept a 10 per cent. reduction in wages, owing to dullness of trade. Some of the employees are members of the Amalgamated Association. It is not known what course will be taken by the men.

Owing to competition and depression of

except that governed by the wages scales. The men, at a conference held with the firm, offered to accept a 5 per cent. reduction, but this, it is understood, will hardly be accepted by the firm.

The Westinghouse Well No. 5 has struck gas, and came in strong last week. It is down 1600 feet.

The stove molders' union is making efforts to end the strike—or, rather, lock-out. Some days ago the molders advised the employers that they were willing to go to work at a reduction of 10 per cent., which concession, receiving no attention, they have since amended to 15 per cent. It is not likely that the foundries now running with non union men will hereafter recognize the

The drill at Chess, Cook & Co.'s well, near the foot of Nineteenth street, South Side, has been stopped at a depth of 1530 feet. Nothing more will be done with the well for the present.

The miners and coke drawers at the Morrell and Cambria Coke Works, in the Con-nellsville region, have struck against a proposed reduction of to per cent. in their wages. The rate of wages paid, which is uniform throughout the region, is 35 cents per wagon for digging coal, and 60 cents per oven for drawing coke.

OHIO.

Trouble appears to be brewing at the works of the Cleveland Rolling Mill Company. A general reduction of 10 per cent. has been made in all the departments of the company's works, affecting the monthly receipts of 2000 workingmen from \$4 to \$10 each per month. It is usual to make a cut each per month. It is usual to make a cut in wages at this time of year, notice being given by means of posters of the intention of the proprietors. This time no such notice was given, the information being conveyed to the men by word of mouth from the foremen in the different departments. The Knights of Labor in the Eighteenth Ward, where the mills are situated award in the mills are situated award in the side of the side where the mills are situated, are discussing the advisability of striking. Threats have been made by letter that unless the rate of wages is restored to the old figures the mills will be burned.

The Etna Furnace, Ironton, lost 1000 cords of wood by fire last week during a high wind. The loss is covered by insurance.

A special gold medal has been awarded the Bower-Barff "rustless" exhibit at the Cincinnati Exposition.

The work of rebuilding the Novelty Iron Works, Cleveland, destroyed in the recent great fire, has been begun.

The Ohio Valley Foundry Company, Bellaire, will this season erect one two-story frame, 60 x 60 feet; one one-story frame, 30 x 20 feet, and add 10 x 20 feet to another two-story frame. They will also put in one 20-horse-power engine, 32 feet of shafting, pulleys, drill press, emery-wheels and pol-

The extensive brass works at Lorain, operated by the United Brass Company whose offices are in Cleveland, closed down last Monday for 60 days.

MISSOURI.

The Shickle, Harrison & Howard Iron Company, of St. Louis, are working on a 7000-ton order of iron pipe for the city.

The stockholders of the Harrison Wire Company have voted to increase the bonded debt of the company from \$150,000 to \$250,000. This has probably been done with a view to resuming operations.

ILLINOIS.

The Tibbles Manufacturing Company have lately been incorporated for the manufacture of an improved sewing machine. Mr. C. E. Tibbles is president, and J. A. Stafford, secretary. Their works are at 13 South Canal street, and the company are building new tools, &c.

VIRGINIA.

Mr. D. S. Cook, formerly of Pennsylvania, and the builder of Calhe Furnace, has almost completed his new coke furnace at Wilton, on the Richmond and Alleghany Railroad, and will blow it in about November 1. The furnace has been built from the material of old Princess Furnace, which was at Ashland, Ky., and will bear the same name. It will have a capacity of about 500 tons per week.

WEST VIRGINIA.

Work is progressing rapidly on the new buildings of the Belmont Nail Company, Wheeling.

The Benwood Iron Works are running all their machines, part on iron and part on steel nails.

ALABAMA.

A Birmingham establishment have been awarded the contract for 1.40,000 iron chains, to be used in the improvement of the Mississippi River between Memphis and Vicksburg. There were bidders from the principal Western cities.

Robert Winship, George Winship, Charles R. Winship, R. E. Rushton, C. J. Hancock and F. H. Schenck have organized in Atlanta the Winship Machine Company, to manufacture machinery. Paid-up capital \$200,000, with privilege of increasing to \$500,000.

David C. Richards and John B. Guinn have recently started the Enterprise Machine Works, Knoxville, for the manufacture of steam engines, circular saw mills, and all kinds of grist-mill machinery; also shaftings, pulleys and hangers.

MARYLAND.

Chas. Zies, 89 and 91 South Fremont street, Baltimore, has just established a machine shop.

A. Schultz & Co., Baltimore, have en-larged their factory for making canners' tools, and will put in new machinery.

NORTH CAROLINA.

The Salem Iron Works, Salem, will add a

MORE NEWS

Rocking Grate Bar.

PATENTED JANUARY, 1884.

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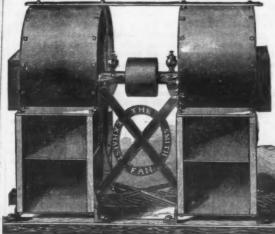
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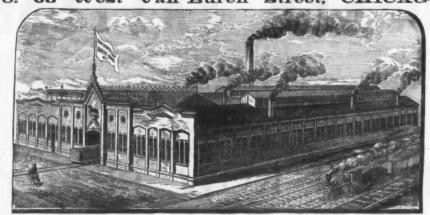
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The work is comprised in five general divisions or chapters, bearing the following titles: (1) Definitions

Pattern Problems.

GHK, of Fig. 426, is presented one of the sets of conditions which necessitate a change of profile, in either the horizontal or raking molding, in order to accomplish a miter joint at the point indicated by I II in the plan. In other words, the conditions are such that with a given profile, as shown by A' in the raking molding, the horizontal molding forming the return will require to be modified, as shown by the profile A', in order to form a miter upon the line I H in the plan; or, if A' is established, A' will have to be constructed to correspond with A'. The reason for this is quite obvious. The distance across the raking molding at right angles to its lines is greater than the corresponding distance across the return molding at right angles to its lines; therefore the projection in the cornice, as shown by the profile A', must be distributed through a smaller space than is shown in the profile A'. In this problem we assume that the pitch of the raking cornice B C is established and that

the profile A is given, and from these parts it is required to de-velop the modified profile. We have the choice of placing the normal profile in the horizontal return and making the raking profile correspond with it, or of placing the normal profile in the raking molding and making the profile of the horizontal molding agree with it. Although the principle upon which these operations is performed is identical in both, the demonstration will be made clearer if each is fully illustrated independent of the other. In this problem and the following one, therefore, we show the several steps necessary to take in modifying the profile, and in cutting the several patterns required to form the structure indicated by the elevation and plan. First we will assume that the normal profile occurs in the raking cornice, and that the horizontal profile is to be modified to suit it. We then proceed as follows: Draw a representation of the normal profile in the raking cornice, as shown by A', placing it to correspond to the lines of the cornice, as shown. Draw another profile corresponding to it in all parts, directly above or

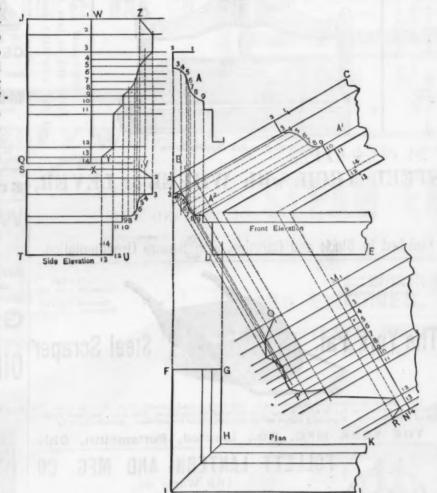


Fig. 426.—To Ascertain the Profile of a Horizontal Molding Adapted to Miter with a Given Inclined Molding at Right Angles in Plun, and the Several Miter Patterns Involved.

below the foot of the raking cornice, in line with the face of the new profile to be constructed, placing this profile A so that it shall correspond with the lines of the horizontal cornice. Divide the profiles A and A' into the same number of parts, and through the points thus obtained draw lines, those from A' being parallel to the lines of the raking cornice, and those from A intersecting them vertically. Through these points of intersection trace a line, which gives the modified profile, as shown by A'. Then A' is the profile of the horizontal return, indicated by G H I F in the plan. It is also the elevation of the miter line I H of the plan for the several patterns involved. We therefore proceed as follows: At any convenient point at right angles to the lines of the raking cornice lay off the stretchout M N of the profile A', through the points in which draw measuring lines in the usual manner. Place the T-square at right angles to the lines of the raking cornice, and,

and Technicalities; (2) Drawing Tools and Materials; (3) Geometrical Problems; (4) The Art and Science of Pattern Cutting; and (5) Pattern Problems. These titles sufficiently indicate the subject matter of the several parts.

The specimen page here shown is from the last division of the book, entitled "Pattern Problems," and which embraces more than one-half of the entire work. It shows the manner in which practical questions are treated. The list of problems demonstrated is very extensive, and embraces almost everything of common occurrence in the sheet-metal trades, with enough of the exceptional to show methods adapted to special requirements. This chapter, in short, is a ready reference book for all who have pattern cutting to do. Each demonstration is complete in itself. A carefully prepared index facilitates reference. The work has been prepared for sheet-metal workers in general, and not for any one class in particular. The tinner will find in it what he requires, without the necessity of studying the cornice problems. cornice maker will find in it everything, from a simple miter to the most complex problems, so arranged as to meet his requirements without the necessity of going through portions in which he is not interested. The general student will find the entire subject presented in such a manner as will faciliate systematic study. The rapidity with which each edition has been exhausted, and the universally favorable

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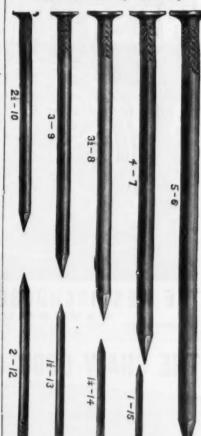


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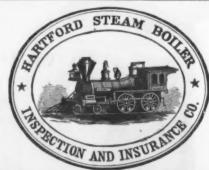
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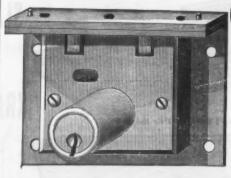
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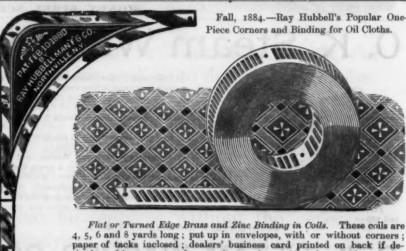
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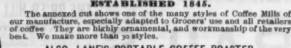
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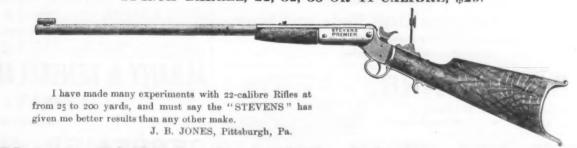
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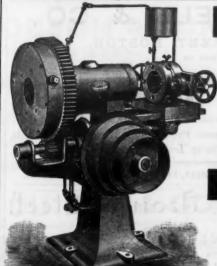
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| PHILADELPHIA.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1                                            |
| Lloyd & Supplee Hardware Co. erms, 30 days. For 60 or 90 days, interest added at 8 per cent. per annum.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                              |
| $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 190                                          |
| Robert Mann, F dos. net. 7.25 Richland Chief. 7.25 Beveled Axes add 50¢ Double Bit Axes, net \$12.00 Augers and Auger Bits.—New List, January 0.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 20.00                                        |
| Bates' Nut Augers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 9                                            |
| Snell's Augers and Bits.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                              |
| Swiss Pattern Hand Bells                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                              |
| Connell's Door Bells.  Gt. Western & Kentucky Cow, new listdis. 70 %  Bering Machines Upright, without AugersList. \$5.50 }  Angular, without AugersList. \$6.75 }  Beli's—Eastern Carriage Bolts. new list, June 10, 1884 1884                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                              |
| Cast Fast Joint, Narrow. dis. 40&10&10 Cast Fast Joint, Narrow. dis. 40&10&210 Cast Loose Joint, Narrow. dis. 60&210 Cast Loose Joint, Broad. dis. 60&210 Cast Loose Joint, Broad. dis. 60&210 Cast Acorn, Loose Pin. dis. 60&210 Cast Acorn, Jpanned. dis. 60&210 Cast Mayer's Loose Joint dis. 60&24 Gis. 60&20 Cast Mayer's Loose Joint dis. 60&24 Gis. 60&20 Cast Mayer's Loose Joint dis. 60&24 Gis. 60&26 Cast Mayer's Loose Joint dis. 60&24 Gis. 60&26 Cast Cast Mayer's Loose Joint dis. 60&24 Gis. 60&26 Cast Cast Cast Cast Cast Cast Cast Cast                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 200                                          |
| Wrought Loose Jointdis. 60&246 ⊕ 60&294&10 ⊈ Blind Butts.  Parker                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1                                            |
| Casters.—Bed (new list July 1, 1880)dis 50@55 % Plate                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 4                                            |
| Gaivanized Pump. dis. 50 @ 55 \$  Best Proof Coil Chain—English. \$ 7 \chief no. \$ | 4 1020                                       |
| Coffee Mills.—Box and Side (new list Jan. 1.  1880. dis 50 % Enterprise dis 90&10 % Cutlery.—Walden Pocket new list net Pennsylvania Knife Co. new list net Landers, Frary & Clark J. Russell & Co., Lamson & Goodnow Mfg. Co. and Moriden Cutlery Co., Manu- facturers' prices net.  Drawing Knives. Hart Mfg. Co. % dis 70&10 % Adjustable Handie dis 90 % Fry Pans.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | total dealer                                 |
| Goodnow Mfg. Co. and Meriden Cutlery Co., Manufacturers' prices net.  Drawing Knives. Hart Mfs. Co.*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | andread in                                   |
| Adjustable Handle Fry Pans, Tinned  # doz \$3.50 4.00 4.50 5.00 5.50 6.50 7.50 9.00 10.00 No 0 1 2 3 4 5 6 7  # doz \$8.50 3.75 4.25 4.75 5.25 6.00 7.00 8.00 8.00  # doz \$8.00 3.75 4.25 4.75 5.25 6.00 7.00 8.00 8.00  No 0 1 2 3 4 5 6 7  Files. Nicholson                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | A SECTION AND ADDRESS OF                     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                              |
| Diston                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1                                            |
| Hammers. Yerkes & Plumb's, new list                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              |
| Disston Loop Handles Cross-Cut33¢ pair net Boynton Loop Handles Cross-Cut33¢ pair net Hatchets. Yerkes & Plumb, new list                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                              |
| Hinges.  Strap and T                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1                                            |
| Electric. \$\psi\ \text{doz}, 18.00 \text{dis. 20 \$\circ\ Wadsworth. \$\psi\ \text{doz}, net 10.50 \text{Walton Straw Kni es. \$\psi\ \text{doz}, net 17.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 111111111111111111111111111111111111111      |
| American Padlocks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 9990                                         |
| No.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | C CONTRACTOR CONTRACTOR                      |
| Long and Short Cutternew list, 50&10 %                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                              |
| Molasses Gates.  Enterprise Mfy. Co.'s Measuring Fauceta.dis. 20&10 < Stebblas' Gates.  Lincoln's Gates.  Lincoln's Gates.  Landers, Farry & Clark's Petroleum.  dis 40&5 < Brass Liquor Cocks, new list Jan. 1, 1880. dis. 60 % Cork Lined Cocks.  dis. 70 % Meat. Cutters.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | -                                            |
| Meat Cutters.   dis. 40 s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 981                                          |
| American dia 40 g Stuffers dia 40 g Enterprise Stuffers dia 40 g Enterprise Stuffers dia 20 g Planes. Sandusky Fool Co. die 20210 g Ogonts. dia 25210 g Oghts and Auburn dia 20210 g Bailey (S. R. & L. Co.). dia 20210 g Plane FronsOhio Tool Co. dia 20210 g Butcher's. \$6.00 @ 6.25 to 2 Plumbs and Levels. Stanley's Adjustable. dis 65210210 g Stanley's Non-Adjustable. dis 65210210 g PleksNow list.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | A NAME AND                                   |
| Razer Strops.  Lamont Combination. \$\psi\$ dos. \$4.00  Lamont Combination. 1 gress lots \$42.00  Imitation Emerson. \$\psi\$ dos. \$2.00  Relact Stropes Reviewed \$\psi\$ 42.5410810 \$\psi\$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | の事ののの方                                       |
| Stanley   Vory   dis. 56   Steelyards   Harts   Pattern   dis. 65   Steelyards   Hart's Pattern   dis. 40   Steelyards   Hart's Pattern   dis. 40   Steelyards   Hart                                                                                                                                           | n<br>L                                       |
| Squares.<br>Steel and Iron.dis. 50; full casedis. 50&10&2 for cash<br>Try Squares, Stanley                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1 2 1 1 1 1 1                                |
| Soythes, Golden Clipper, Damascus Blade, Boxed and Sharpened. W doz \$6.00 Clipper No. 10, Bronzed Blade, Boxed and \$8.50 Sharpened. Sharpened W doz \$8.50 Sharpened. Sharpened W doz \$8.50 Sharpened. Sharpened W doz \$6.00 Sharpened. Sharpened. Sharpened W doz \$6.00 Sharpened W                                                 | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1      |
| Shovels and Spades.   dis 17% s   Oliver Ames & Sons, new list.   dis 50 @ 50&10   Griffiths   dis 50 @ 50&10   South   Griffiths   dis 50 @ 50&10   Sad I gons - 4 to 10   B   2% @ 3e   Mars Devis   Patrick   dis 3e                                                                                                                                          | 81<br>85<br>25<br>25<br>15<br>15<br>15       |
| Stone                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Ju<br>No<br>Gi<br>Gi<br>Di<br>Di<br>Ci<br>Pi |

|              | T                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | I                          |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
|              | Screws.   Gis 75 %   Fist Head Iron.   Gis 75 %   Fist Head Brass   Gis 75 %   Round Head Brass   Gis 75 %   Round Head Iron.   Gis 70 %   Round Head Iron   Gis 70 %   Gis 70 %   Round Head Iron   Gis 70 %   Round Hea                                                                                                                                                                                                                              |                            |
|              | Round Head Brass                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 56                         |
| -            | Britannia, Boardman's   dis 00 %   Britannia, Parker's   dis 00&10 %   Tinned   dis 10 %   Springs.—Torrey   dis 50 %                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 7. 8.5.160                 |
|              | Gem No. 3 mail Japanned   \$2.00   dis 50&10 %   Gem No. 2 medium Japanned   2.75   dis 50&10 %   Coll No. 10 % gross net   \$0.00   Other Standard Springs   dis 50&10 %   Warner Door Springs % dos \$2.50   dis 40 %   Warner Door Springs % dos \$2.50   dis 40 %   dis 50&10 %                                                                                                                                                                                                                          | 0                          |
|              | Standard Spring Hinger—    Single No. 0, # dos. net.   1.25     Single No. 1, # dos. net.   1.50     Other Standard Spring Hinges   dis 25&10 \$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 5-117-3                    |
|              | Stove Polish Gem   Fgross, \$4.50, dis 5 \$ Dixon   0.00, dis 10 \$ Fire Fly   \$3.00 gross, net Tucks   dis 30&10 \$ \$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | C                          |
|              | Shoe Nails = 3, and over, 7¢.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | CO                         |
| ******       | Traps.   dis 35   denuine Oneida—Newhouse   dis 35   lm. Oneida—Newhouse list.   First qualdis 60&10   Vises.—Solid Box. Trenton new list.   dis 60 & 50   Wrenches.—Agricultural.   dis 70 & 3   Coss' Genuine.   dis 60&3   Coss' Mechanics'   dis 60&10&3   Coss' Mechanics,   Mail.   Bar   dis 70&15   Wire.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                            |
| -            | Coes' Mechanics, 'Mall. Bar dis 702.1023 c<br>Wire. Bright or Annealed, No. 0 to 18. dis 67½ S<br>Bright or Annealed, No. 10 to 26. dis 70 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | AAFF                       |
| -            | Wire.  Bright or Annealed, No. 0 to 18                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | PPSTTP                     |
| -            | Gaivanized. No. 7 to 18Market List, dis 4714 @ 50 \$ Wringers. Peerless No. 234                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | PCR                        |
|              | Galvanized. No. 7 to 18. Market List, dis 4734 @ 60 's Wringers. Peerless No. 294                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | FPPSS                      |
| *****        | PITTSBURGH.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | В                          |
|              | Merchant Iron.  TERMS.—Note or acceptance at 60 days, with current rate of exchange on New York, or a discount of 2 Feent, for each, if remitted within 10 days from date of                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | C<br>Si<br>L               |
| -            | For fluctuations and discounts on oard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 100                        |
|              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                            |
| Part Land    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1<br>1<br>1<br>8<br>3<br>7 |
| 441          | 1 to 154                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | F                          |
| 1            | Half Court and Half Door A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | CBC                        |
| 0 40 40      | 74 to 134 inch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | STTP                       |
| 20.00        | 1 inch, Nos. 13 and 14                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | S C S G                    |
| ( )          | % " " 11 and 124.1¢                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | GR                         |
| 6            | % and % by % and 5-16 " 3.5¢                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | F                          |
| 5            | Light Bands.  14 to 6 by 14 to 3-16. 3.04  14 to 6 by Nos. 11 and 13 3.14  1 to 14 by 14 to 3-16. 3.14  1 to 18 by 14 to 3-16. 3.14  1 to 18 by 14 to 3-16. 3.14  1 to 18 by 16 to 3-16. 3.14  14 and 13-16 by 16 to 3-16. 3.14  15 and 13-16 by 16 to 3-16. 3.14  14 and 11-16 by 16 to 3-16. 3.14  14 and 11-16 by 16 to 3-16. 3.14  15 and 11-16 by 16 to 3-16. 3.14  16 and 9-16 by Nos. 11 and 12 3.14  17 inch by 16 and 3-16. 4.34  18 inch by 16 and 16. 4.34  19 inch by Nos. 11 and 13. 4.44                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Geographic                 |
| t t          | \$\frac{1}{6}\$ and \$13-16\$ by Nos. \$1\$ and \$12\$.     \$0.56\$       \$\frac{1}{6}\$ and \$11-16\$ by \$\frac{1}{6}\$ to \$3-16\$.     \$2.76\$       \$\frac{1}{6}\$ and \$11-16\$ by Nos. \$11 and \$12\$.     \$3.56\$       \$\frac{1}{6}\$ and \$9-16\$ by Nos. \$11 and \$12\$.     \$4.76\$       \$\frac{1}{6}\$ and \$9-16\$ by Nos. \$11 and \$12\$.     \$4.76\$       \$\frac{1}{6}\$ inch by \$\frac{1}{6}\$ and \$3-16\$.     \$4.36\$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | PRSSPP                     |
| 65 66        | 114 to 4. Nov. 18, 14 and 15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | E                          |
| 2 2 2        | 1\( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \) \( \)                                                                                                                                                                                                                            | 91                         |
| 200          | 15-16, 1, and 1½, Nos. 16, 17 and 18                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 8                          |
| THE PARTY OF | 72 No. 91                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | DHL                        |
|              | \$\begin{array}{cccccccccccccccccccccccccccccccccccc                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | L                          |
| 2000000      | Nos. 13, 14 and 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | D                          |
| -            | \$\begin{array}{cccccccccccccccccccccccccccccccccccc                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | nited                      |
|              | 56. Nos. 18, 14 and 15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1 Unit                     |
| -            | \$\begin{array}{cccccccccccccccccccccccccccccccccccc                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                            |
| -            | 14 inch. Nos. 16, 17 and 18                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 1                          |
|              | Inch, Nos. 19 and 20.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                            |
| -            | Ties.  1-10¢ \$\Pi\$ axira will be charged for each gauge lighter than the lightest indicated.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                            |
| -            | Barrel Hoops.  Barrel Hoops.  134 to 2 in., cut to length.  9 to 11 5, \$\pi\$ set of 6 hoops.  \$\pi\$ and less than 9 \$\pi\$, \$\pi\$ set of 6 hoops.  \$\prec{3.5c}{3.5c}\$ test han \$-\pi\$, \$\pi\$ set of 6 hoops.  \$\prec{3.5c}{3.5c}\$ and less than 9 \$\pi\$. \$\pi\$ set of 6 hoops.  \$\prec{3.5c}{3.5c}\$ test han \$-\pi\$, \$\pi\$ set of 6 hoops.  \$\prec{3.5c}{3.5c}\$ test han \$-\pi\$, \$\pi\$ set of 6 hoops.  \$\prec{3.5c}{3.5c}\$ test han \$-\pi\$, \$\pi\$ set of 6 hoops.  \$\prec{3.5c}{3.5c}\$ test han \$-\pi\$, \$\pi\$ set of 6 hoops.  \$\prec{3.5c}{3.5c}\$ test han \$\pi\$ \$\pi\$. \$\pi\$ set of 6 hoops.  \$\prec{3.5c}{3.5c}\$ test han \$\pi\$ \$\pi\$. \$\pi\$ set of 6 hoops.  \$\prec{3.5c}{3.5c}\$ test han \$\pi\$ \$\pi\$. \$\pi\$ set of 6 hoops.  \$\prec{3.5c}{3.5c}\$ test han \$\pi\$ \$\pi\$. \$\pi\$ set of 6 hoops.  \$\prec{3.5c}{3.5c}\$ test han \$\pi\$ \$\pi\$. \$\pi\$ set of 6 hoops.  \$\prec{3.5c}{3.5c}\$ test han \$\pi\$ \$\pi\$. \$\pi\$ set of 6 hoops.  \$\prec{3.5c}{3.5c}\$ test han \$\pi\$ \$\pi\$. \$\pi\$ set of 6 hoops.  \$\prec{3.5c}{3.5c}\$ test han \$\pi\$ \$\pi\$. \$\pi\$ set of 6 hoops.  \$\prec{3.5c}{3.5c}\$ test han \$\pi\$ \$\pi\$. \$\pi\$ set of 6 hoops.  \$\prec{3.5c}{3.5c}\$ test han \$\pi\$ \$\pi\$. \$\pi\$ set of 6 hoops.  \$\prec{3.5c}{3.5c}\$ test han \$\pi\$ \$\pi\$. \$\pi\$ set of 6 hoops.  \$\prec{3.5c}{3.5c}\$ test han \$\pi\$ \$\pi\$. \$\pi\$ set of 6 hoops.  \$\prec{3.5c}{3.5c}\$ test han \$\pi\$ \$\pi\$. \$\pi\$ set of 6 hoops.  \$\prec{3.5c}{3.5c}\$ test han \$\pi\$ \$\pi\$. \$\pi\$ set of 6 hoops.  \$\prec{3.5c}{3.5c}\$ test han \$\pi\$ \$\pi\$. \$\pi\$ set of 6 hoops.  \$\prec{3.5c}{3.5c}\$ test han \$\pi\$ \$\pi\$. \$\pi\$ set of 6 hoops.  \$\prec{3.5c}{3.5c}\$ test han \$\pi\$ \$\pi\$. \$\pi\$ set of 6 hoops.  \$\prec{3.5c}{3.5c}\$ test han \$\pi\$ \$\pi\$. \$\pi\$ set of 6 hoops.  \$\prec{3.5c}{3.5c}\$ test han \$\pi\$ \$\pi\$. \$\pi\$ set of 6 hoops.  \$\prec{3.5c}{3.5c}\$ test han \$\pi\$ set | 1                          |
|              | No. 9 and heavier                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | gl<br>in<br>in<br>bi       |
|              | Piow Slabs.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                            |
|              | Nos. 15 to 17. d. 4.1¢ b.6¢ 7.1¢ Nos. 23 to 24. d.3¢ b.8¢ 7.3¢ Nos. 25 and 28. d.5¢ 8.0¢ 7.6¢ 80.0 7.6¢ 80.0 7.6¢                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | A                          |
|              | All sheets No. 18 and lighter, over 30 inches wide,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | H<br>H<br>Sa               |
|              | Galvanized C. M. B.—(Charcoal Hammered Blooms.)       Nos. 14 to 20.     12¢ No. 27.     15¢       Nos. 21 to 24.     13¢ No. 28.     16¢       Nos. 25 and 26.     14¢ No. 29.     18¢                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Se Sh                      |
| 1            | 136 by 56 by 5-163.0¢   1 by 56 by 5-163.5¢ Angle Iron. 214, 3, 314 and 4 inch3.3¢                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 81 80                      |
| 4            | 13, 136, 2 and 236 "                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                            |

| T                                                                                                            | HE IRON AGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |     |
|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| 5 % 5 % 5 % 5 % 5 % 5 % 6 % 6 % 6 % 6 %                                                                      | Nails.   See Pittsburgh Trade Report.   Space   Pittsburgh Trade Report.   Space   Pittsburgh Trade Report   Pitts   | 7   |
| 35 %<br>10 %<br>50 %                                                                                         | Best. 2d Qual. 3d Qual. Open Hearth.  To 21 gauge11¢ 10¢ 8¢  1¢ extra for each additional gauge. Cut to multiples or specified lengths, 4¢ extra.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |     |
| 13 x<br>13 x<br>15 x<br>16 x<br>170 x<br>170 x<br>16 x<br>16 x<br>16 x<br>16 x<br>16 x<br>16 x<br>16 x<br>16 | Micellaneous Cust Steel, Axie Steel for carriages and wagons 56 Axie Steel for carriages and wagons 56 Prog Foints and Plates 66 Prog Help Steel for carriages and wagons 56 Prog Steel Steel for Carriages and Wagons 56 Prog Steel | MSF |
| ent<br>2 p<br>e of                                                                                           | Boiler, Fire-Box and Flue Sheets, not less than 3-16 thick.  14% Boiler, Fire-Box and Flue Sheets, not less than 3-16 thick.  15% Boiler, Fire-Box and Flue Sheets, not less than 16 thick.  16¢ Circulars and semi-circulars, when ordered sepathered stack, to shape.  16¢ Cosmoke |     |
| 2.5¢<br>2.6¢<br>2.9¢<br>2.7¢<br>2.7¢<br>2.7¢<br>2.7¢<br>3.9¢<br>3.1¢<br>3.5¢<br>5.5¢                         | 1 and 13-10x/4 and 5-32, 3(x3-10 and 5-32) 95-64 4 and 9(x3/4 and 3-32 and 12 g 10e 50ild Safe Cast Steel 6e Three and Five Ply Cast Steel 8e Fork and Rake, Crucible 10e Horse Rate Steel, out to lengths, Crucible 6e Horse Crucible 10e Corn Stalk Cutter, beveled 6e                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | •   |
| 8.7¢<br>8.5¢<br>8.5¢<br>8.5¢<br>4.0¢<br>8.8¢<br>4.4¢<br>4.1¢<br>2.7¢                                         | Spring spiral and taper, cut to lengths 4¢ Tire, 2-16 thick and above 33¢¢ Toe Calk 95¢ Plow 35¢¢ Plow 35¢¢                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |     |
| 2.8¢<br>3.0¢<br>3.0¢<br>3.1¢<br>3.1¢<br>8.1¢<br>8.4¢<br>8.5¢<br>8.5¢                                         | Terms.—Four months: 3 per cent. discount for cash, if remitted within 30 days.  Furnace Floor and Straightening Plates                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |     |

ed, but not otherwise. Window Glass.

Window Glass.

wat, 60&10 s on Single Strength, 60&30 s on Double.

Prices current, \$\psi\$ box of 50 feet.

| 28                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                              | 1                                                                                                                             |                                                                                                                | 1                                         |
|-----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| United                                                                                  | Sizes                                                                                                                                                                                                                                                                                                                                                                                                                                | AA.                                                                                                                                          | A                                                                                                                             | B.                                                                                                             | C.                                        |
| 54<br>60<br>70<br>80<br>84<br>90<br>94<br>100<br>25<br>39<br>48<br>54<br>60<br>70<br>80 | 16 x 24 to 20 x 28.  15 x 34 to 24 x 30.  26 x 25 to 24 x 36.  26 x 36 to 46 x 36.  26 x 36 to 54 x 36.  26 x 36 to 54 x 36.  26 x 36 to 57 x 54.  30 x 55 to 56 x 36 x 54.  30 x 55 to 54 x 76.  34 x 56 to 54 x 76.  38 x 60 to 40 x 60.  5 Boulbe Strength.  6 x 6 to 10 x 16.  11 x 14 to 15 x 26.  15 x 26 to 20 x 28.  26 x 36 to 36 x 36.  26 x 36 to 36 x 36.  26 x 36 to 36 x 36.  26 x 36 to 30 x 64.  27 x 46 to 30 x 64. | \$8.75<br>9.35<br>10.75<br>12.25<br>13.00<br>14.50<br>15.00<br>15.00<br>15.00<br>18.25<br>14.50<br>17.25<br>19.75<br>21.00<br>23.25<br>24.00 | \$8.00<br>8.50<br>9.75<br>10.75<br>11.50<br>13.25<br>14.00<br><br>12.85<br>13.25<br>13.75<br>17.25<br>18.50<br>21.25<br>22.50 | \$7.50<br>8.00<br>8.76<br>9.00<br>9.75<br>10.75<br>11.25<br>13.50<br>14.00<br>14.50<br>14.50<br>15.75<br>17.25 | 87.0<br>7.2<br>7.2<br>7.2<br>10.8<br>11.2 |
| 94                                                                                      | 30 x 52 to 30 x 54                                                                                                                                                                                                                                                                                                                                                                                                                   | 25.75<br>27.75<br>29.25<br>33.25                                                                                                             | 23,25<br>25,00<br>27,75<br>30,00                                                                                              | 19.25<br>21.75<br>24.00<br>27.75                                                                               | ***                                       |

An additional 10 per cent. will be charged for all lass more than 40 inches wide. All sizes above 52 nohes in length, and not making more than 81 united nohes, will be charged in the 84 united inches weaker.

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|----------|
| 6.7      |
| . \$13.0 |
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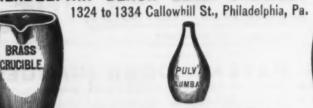
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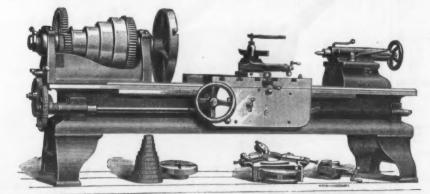
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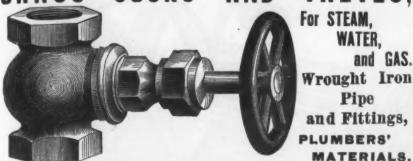
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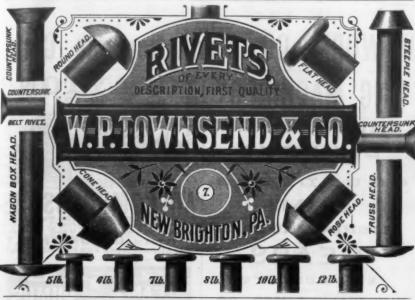
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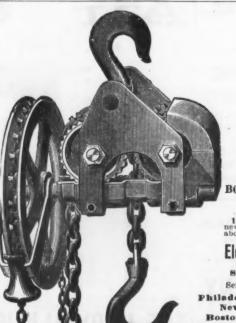
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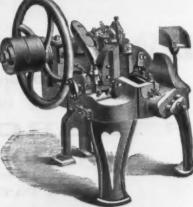
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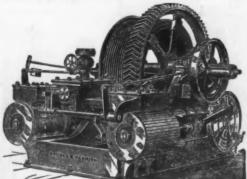


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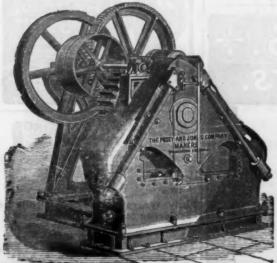
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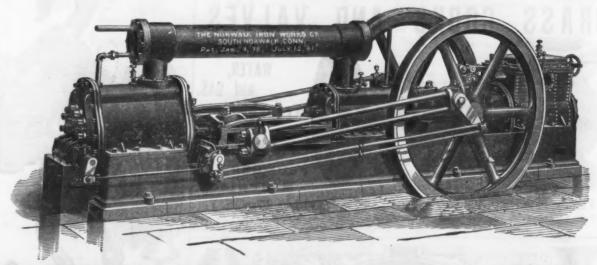
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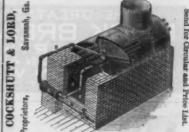


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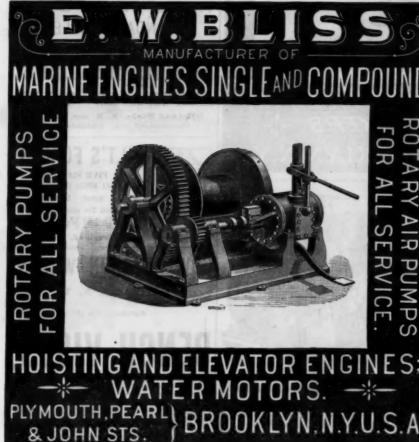
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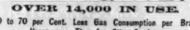
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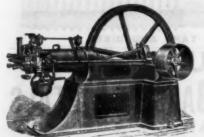
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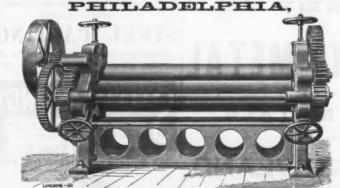
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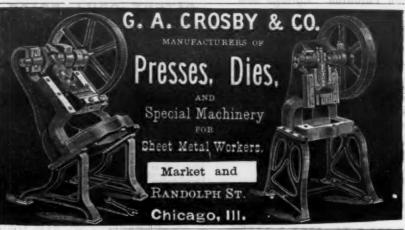
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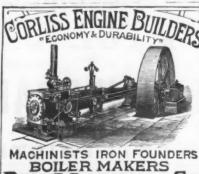
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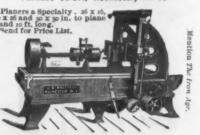
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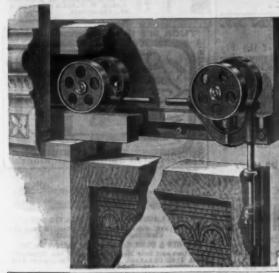
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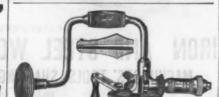
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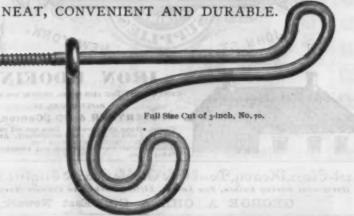
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